

TECHNOLOGY

REVIEW

April 1959



technology review

Published by MIT

This PDF is for your personal, non-commercial use only.
Distribution and use of this material are governed by copyright law.
For non-personal use, or to order multiple copies please email
permissions@technologyreview.com.



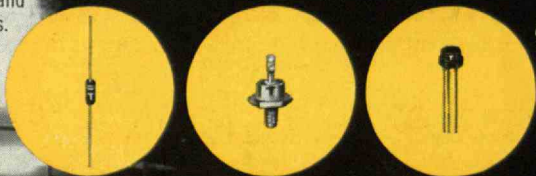
wherever there's electronics...

there's Transitron

Advanced electronics is helping to open new frontiers in space. Vital to the reliability of rockets are their electronic guidance systems which depend on the tiny semiconductor. Maker of the industry's broadest line of advanced silicon and germanium semiconductors is Transitron. In rockets, missiles, industrial computers, long-distance communications, radar, atomic subs, jets — *wherever there's electronics* — there's Transitron, known the world over for leadership in semiconductors.

U. S. moon-shoot vehicles depend on Transitron products in their instrumentation and guidance systems.

TRANSISTORS • RECTIFIERS • DIODES • REGULATORS • VOLTAGE REFERENCES

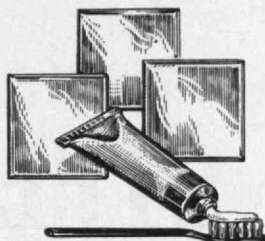


Transitron

electronic corporation • wakefield, massachusetts



SALES OFFICES IN PRINCIPAL CITIES THROUGHOUT THE U. S. A. • CABLE ADDRESS: TRELCO



... tile or toothpaste

... batteries or briquets



... lp's or linoleum

Better Products begin with CABOT!

When it comes to the wisest, most economical selection of raw materials, you'd be surprised how *often* Cabot can help . . . how *much* Cabot can help to make your product perform better, last longer, and earn more profit.

WHICH OF THESE CABOT MATERIALS CAN HELP YOUR PRODUCT?

CABOT CARBON BLACKS . . . more than 50 different grades of channel, furnace and thermal blacks for use by the rubber, printing ink, paint, varnish, lacquer, enamel, plastics, paper, phonograph record, battery and other industries.

CAB-O-LITE® (wollastonite) . . . as a paint pigment, this versatile, uniform calcium metasilicate has more desirable properties than other extenders used singly or in combination. Excellent for all types of paint, and for quality improvement of all types of ceramics.

CAB-O-SIL® . . . this unique airborne silica, in extremely small quantities, greatly improves a host of products. Remarkable for its unusual combination of properties, it's equally effective as a thixo-

tropic, thickening, gelling, suspending, flatting, reinforcing, anti-caking and anti-slip agent. Used in plastics, lubricating oils, greases, paints, varnishes, lacquers, rubber, sulfur, insecticides, pharmaceuticals, cosmetics, many other products.

PT® PINE TAR PRODUCTS . . . these versatile quality controlled materials improve the performance of a wide variety of products, including: rubber, paint, cordage, oakum and insecticides.

For complete information, phone or write:

GODFREY L. CABOT, INC. 
77 FRANKLIN ST., BOSTON 10, MASSACHUSETTS
Phone: Liberty 2-7300

MARITIME STEEL AND FOUNDRIES LIMITED

- Canadian manufacturers of P & H Power Shovels and Cranes
- Steel and Alloy Castings
- Structural Steel—Buildings and Bridges
- Custom-built Machinery

NEW GLASGOW, NOVA SCOTIA, CANADA



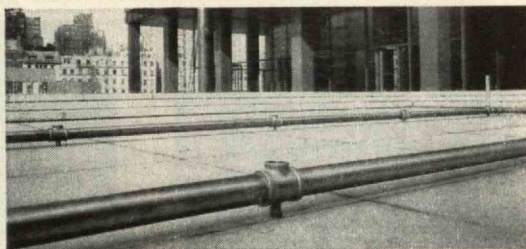
FROM THE GROUND UP...

World's First Bronze Skyscraper Uses Phelps Dodge Red Brass Pipe!

A vital network of Phelps Dodge Red Brass Pipe—roughly 17 miles of it—runs through the magnificent new bronze office building at 375 Park Avenue in New York. From street level to the top of this striking skyscraper, the maze of piping carries the hot and cold water needed for the 38-story structure's mammoth plumbing system.

A number of especially designed water fixtures, including a unique central drinking water system, are connected to these Phelps Dodge pipes. Other PD pipes under the park plaza supply water to the graceful fountains and pools in front of the building.

Plumbing contractors know that the famous Phelps Dodge "Mine-to-Market" quality line of copper tube and pipe more than meets every requirement for modern plumbing systems. That's why they specify Phelps Dodge for every kind of installation—from skyscrapers to homes!



Red brass pipe in pool bottoms on building plaza furnishes water for beautiful fountain displays.

*Quality tube sold the quality way—through
authorized wholesalers!*

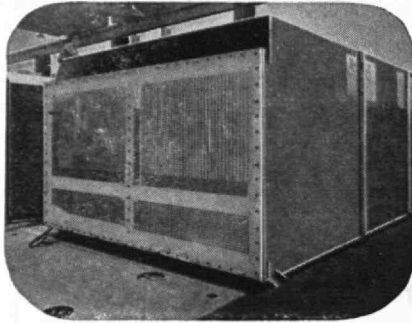
PHELPS DODGE COPPER PRODUCTS

CORPORATION

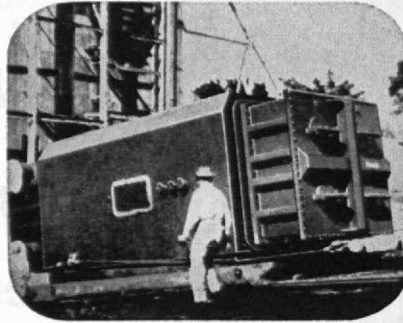
New York, N. Y. • Los Angeles, Calif.



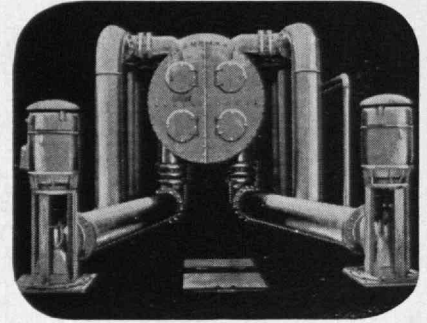
HOW C.H. WHEELER CONDENSER DESIGN saves space...



Head Room problems are solved by compact condensers like this one. Turbine floor to basement floor, in this case, is only 20 ft. The Unit has 65,000 square feet of condensing surface.

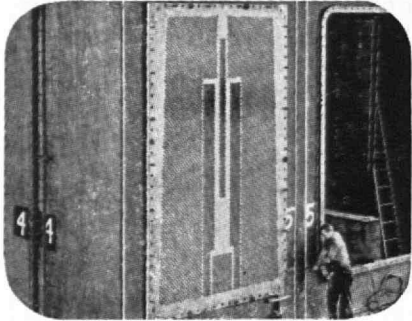


Rectangular Cross Section makes C.H. Wheeler Condensers adaptable to nearly any space or condenser arrangement because the length, width and height of any Wheeler Unit can be varied almost at will.

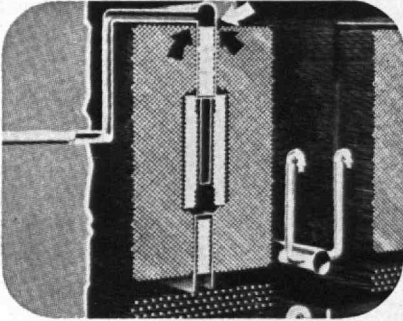


But Wheeler Doesn't limit itself to rectangular design. A round cross section worked out better here, for example, at the first planned gas-steam turbine station ever designed and built in United States.

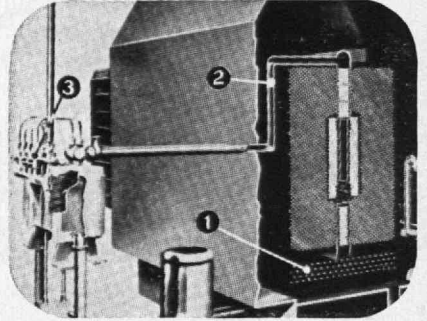
improves power generating efficiencies...



Triple Lane tube layout, another design feature, provides 3 pathways for steam travel, utilizes maximum cooling surface and produces higher condenser vacuums for power generating stations.

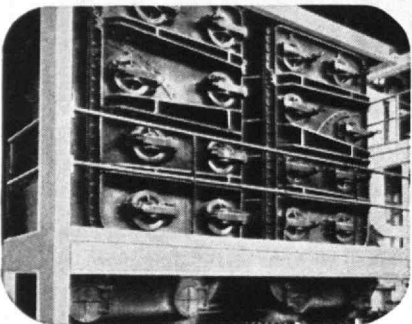


Location of air-vapor takeoff speeds steam travel and allows steam to penetrate to the peripheries of all tubes. It thus improves condenser efficiencies and overall power station operation as well.

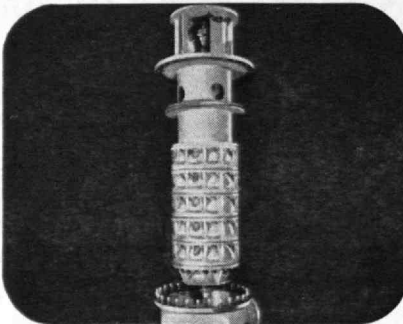


Deaeration of condensate not to exceed 0.01 cc. oxygen/liter is available with special Wheeler designs. Note the Deaerating Bars (1), the Air-Vapor Suction Line (2), and Tubejet® Ejectors (3).

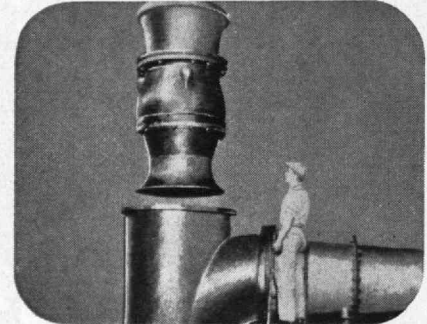
and reduces maintenance



Patented Reverse Flow permits flushing tubes and sheets without shutting down Unit, during full load with either or both circulating pumps operating. No additional circulating water inlet or discharge piping necessary with C.H. Wheeler's Reverse Flow.



"Pull-Out" Condensate Pumps simplify maintenance because entire pumping element, including all rotating parts, can be removed without disturbing either the pump barrel or the piping connections.



C. H. Wheeler Circulating Pumps, like Condensate Pumps, are easy to inspect and maintain because of "Pull-Out" design. In addition, shafts are heat treated alloy steel and impellers are statically and dynamically balanced for trouble-free operation.

C. H. Wheeler has been designing and building condensers since 1903; has developed such features as Dual Bank Design and Reverse Flow.

C. H. WHEELER MFG. CO.

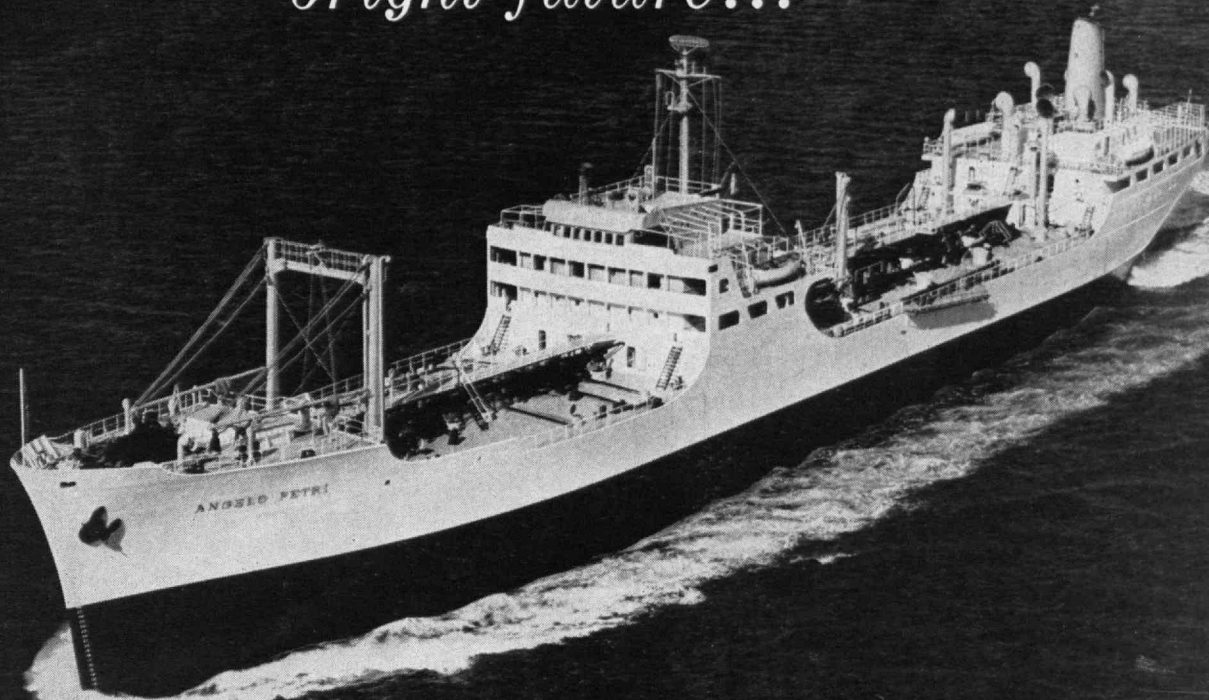
Whenever you see the name C. H. Wheeler on a product, you know it's a quality product

Steam Condensers • Steam Jet Vacuum Equipment • Centrifugal, Axial and Mixed Flow Pumps • Marine Auxiliary Machinery • Nuclear Products

19TH & LEHIGH AVENUE

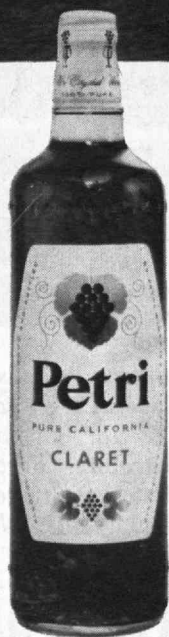
Philadelphia 32, Pennsylvania

*Unusual past...
bright future...*



for the World's largest wine tanker

S.S. Angelo Petri was built by Bethlehem's San Francisco yard.



The S.S. Angelo Petri, America's first wine tanker, is certainly a most unusual ship. Representing a pioneering venture on the part of United Vintners, Inc., the vessel is unique in several respects. Because she was designed to transport a cargo so dependent upon high standards of purity and flavor, her main cargo tanks and all connecting piping and valves are of stainless and stainless clad steel—1,800,000 pounds of it in the tanks alone.

The ship has an unusual past. The entire after section was originally that of a T-2 tanker which broke in two in a storm. The machinery section was salvaged and towed to Anchorage, Alaska, where it provided electric power to the city for some years. Now, provided with entirely new bow and cargo sections, this extraordinary ship is back at sea. And the same C-E boilers that powered her, first as a World War II tanker and then as a floating power station, are doing the same reliable job for the S.S. Angelo Petri.

COMBUSTION ENGINEERING

Combustion Engineering Building
200 Madison Avenue, New York 16, N. Y.



C-168

ALL TYPES OF STEAM GENERATING, FUEL BURNING AND RELATED EQUIPMENT; NUCLEAR REACTORS; PAPER MILL EQUIPMENT; PULVERIZERS; FLASH DRYING SYSTEMS; PRESSURE VESSELS; SOIL PIPE



LINCOLN LABORATORY

continues to augment its staff.

We invite inquiries from persons
with superior qualifications.

A brochure is available which is
generally descriptive of

Lincoln Laboratory programs
in the following areas:

AICBM SYSTEMS STUDIES

NEW RADAR TECHNIQUES

RADIO PHYSICS

SOLID STATE Physics, Chemistry, and Metallurgy

COMMUNICATIONS:

Techniques

Psychology

Theory

**INFORMATION PROCESSING,
DIGITAL COMPUTER TECHNOLOGY**

Research and Development

**M.I.T. LINCOLN
LABORATORY**

BOX 28

LEXINGTON 73, MASSACHUSETTS



25 YEARS AGO

*A column of items of interest culled
from The Technology Review's files*

■ From data compiled by Registrar Joseph C. MacKinnon, '13, showing the mid-year academic accomplishment of the 485 freshmen of the Class of 1937, it appeared that some 200, who had been admitted "without examination from the upper scholastic fifth of their classes in accredited secondary schools," had scored an average rating of 3.40 contrasted with an average rating of 2.77 by those who had entered "by examination." Encouraged by the success of this "upper fifth" method, which had been started experimentally for the Class of 1936, the Faculty Committee on Admissions announced "still another alternative form of admission, College Board Plan B," which would be effective in the following autumn for the entering Class of 1938.

Plan B, the description read, "instead of requiring many examinations, . . . allows a high-ranking and well-recommended student from a secondary school to present subjects of his first three years on certificate, but tests the quality of his preparation by requiring College Board comprehensive examinations in four of his senior subjects. The Institute will require examinations in English, a modern language, advanced mathematics, and physics or chemistry. It will retain the old College Board Plan A, . . . as well as the upper fifth plan and the New York State Regents plan."

■ Faculty promotions announced during April, 1934, included the following:

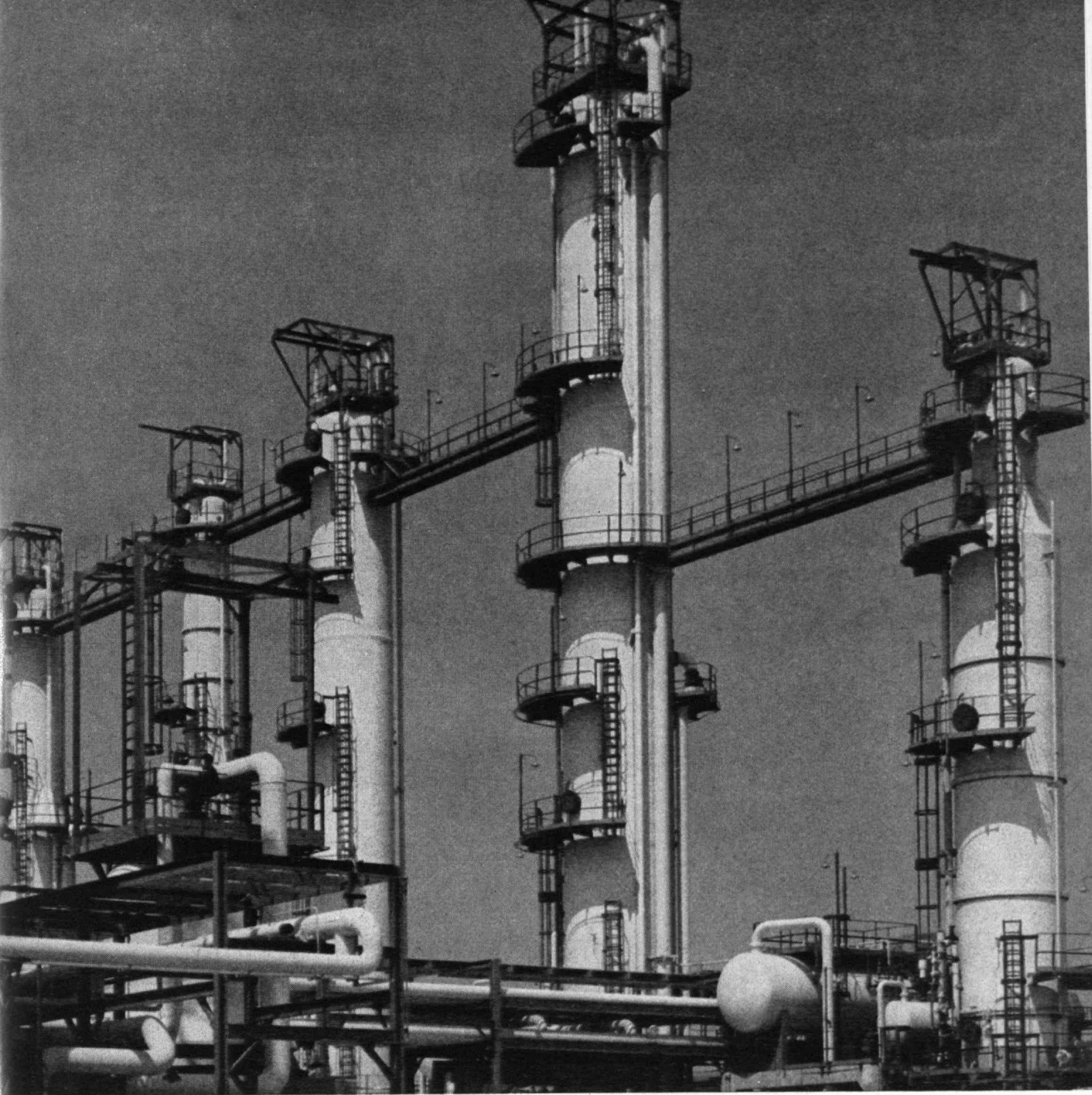
Professors *Charles B. Breed*, '97, as Head of the Department of Civil and Sanitary Engineering; *Ralph E. Freeman*, as Head of the Department of Economics and Social Sciences; and *Henry B. Phillips* as Acting Head of the Department of Mathematics.

To full Professorships: *Arthur C. Hardy*, '18, Physics; and *Walter C. Schumb*, Chemistry.

To Associate Professorships: *Raymond D. Douglass*, '24, Mathematics; *Philip M. Morse* and *Bertram E. Warren*, '24, Physics; *Edward R. Schwarz*, '23, Mechanical Engineering; and *Thomas K. Sherwood*, '24, Chemical Engineering.

To Assistant Professorships: *William P. Allis*, '23, and *John C. G. Wulff*, Physics; *Avery A. Ashdown*, '24, and *Stephen G. Simpson*, '16, Chemistry; *Herbert L. Beckwith*, '26, Architecture; *Frederick G. Fassett, Jr.*, English and History; *Samuel H. Caldwell*, '25, Electrical Engineering; and *John B. Wilbur*, '26, Civil and Sanitary Engineering.

■ . . . Elections to its membership at the April, 1934, meeting of the National Academy of Sciences included three members of the Institute's Faculty, namely: *Vannevar Bush*, '16, Vice-president and Dean of Engineering; *James F. Norris*, Director of the Research Laboratory of Organic Chemistry; and *Norbert Wiener* of the Department of Mathematics.



Third New Platformer for Gulf...

COLUMNS BY

GRAVER[®]

The third of three new 26,000 b/d Platforming[®] units to be installed by the Gulf Oil Corporation is now on stream at Gulf's Port Arthur refinery. Built under license from the Universal Oil Products Company, this latest installation will substantially increase the high octane potential at the refinery.

The five large columns above and two separator units were shop-fabricated at Graver's East Chicago plant and erected by Procon Incorporated, the general contractor. Eighteen columns for the other two Platforming unit installations at Gulf's Philadelphia refinery were also shop-fabricated at Graver's East Chicago plant.

Large or small processing equipment for petroleum, petrochemical, chemical and nuclear energy installations are produced with dispatch and skill by Graver artisans. Graver's century of experience means quality construction.

GRAVER TANK & MFG. CO. EAST CHICAGO, IND.

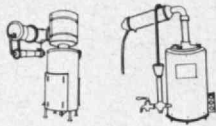
DIVISION—UNION TANK CAR COMPANY

Barnstead

pure
water
specialists
since
1878...

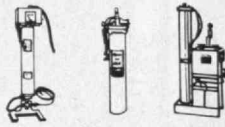
STILLS

In capacities of from 1/2 to 1000 g.p.h., for laboratory, commercial and industrial use.



DEMINERALIZERS

Mixed-Bed, One-Bed, Two-Bed, and Four-Bed models. Capacities up to 2500 g.p.h.



TRANSISTOR WASHERS



For washing and rinsing transistors, diodes, rectifiers, tube parts, and materials such as Silicon and Germanium.

ULTRA PURE WATER

BARNSTEAD® "MF" Sub-micron Filter for electronic and nuclear fields. Filters out particles to .000016 inches. Produces 18,000,000 ohm water.



Barnstead

STILL & STERILIZER CO.

A. White, '26 T. Hartwell, '28
N. A. Everett, '48 V. C. Smith, '48 S. Beran, '58
2 Lanesville Terrace, Boston 31, Mass.



FREE BOOKLET TELLS WHAT CO₂ CAN DO FOR YOU

agriculture
chemistry
metals
electronics
refrigeration
food
drugs
textiles
rubber

There's practically no end to the important jobs that CO₂—combined with Liquid Carbonic savvy—is doing. Chances are this combination can come up with some surprising answers for you, too. For scores of CO₂ applications, covering all industry, send for LIQUID's new free booklet, "Applications Unlimited." Just use the coupon below.

MAIL THIS COUPON

LIQUID CARBONIC

DIVISION OF GENERAL DYNAMICS CORPORATION

135 South LaSalle St. • Chicago 3, Illinois

Send me my free copy of "Applications Unlimited."

Name _____
Company _____
Position _____
Address _____
City _____ Zone _____ State _____

MAIL RETURNS

The Russian View of M.I.T.

FROM JAMES CRITCHLOW, '45:

I happened this morning to be looking through the pages of a monthly magazine published by the Ukrainian Komsomol in Kiev (U.S.S.R.). To my surprise, one of the articles proved to be devoted almost entirely to the Institute. The author of the article, one of the group of Soviet student editors who visited the United States in May, 1958, "describes" M.I.T. and his impressions of it. Here are a few of his points:

1. M.I.T., a private institute, has 15,000 students. It is a kind of "corporation of education." To explain this, the author writes that "some corporations produce steel, copper, or electricity, but the Institute produces specialists with higher education."

2. The Institute is financed by "funds received from students in the form of tuition, by 'patronage' contributions from various 'national funds,' and also — in case of necessity — by issuance and sale of lotteries, shares, and so on."

3. The Institute has a newspaper called *The Tech* which "is possibly supported entirely by advertising, for the newspaper devotes no less than half of its pages to publication of advertisements." The writer adds that "the majority of this advertising has nothing in common with student needs." Like the big newspapers, *The Tech*, he explains, "seeks sensations," which Americans love.

4. The Institute's dormitories are built through contributions from various patrons and fraternities.

5. "We tried to dispel the atmosphere of mistrust and apathy which for years the bourgeois press has been instilling in the American student." Nevertheless, the author reports that his group were subjected to various "provocations" during their visit to Tech.

These are just a few of the interesting "facts" about "Massachusetts' kyy institut tekhnologii" presented in the article's six pages of fine print.

My work here as manager of Radio Liberation's Central Research Department makes me a constant reader of Soviet publications.

Munich 27, Germany

New York Telephone Co.,
Jamaica, L. I.
Voorhees, Walker, Smith,
Smith & Haines, Architects



Good quality . . . speedy construction . . . right cost

This is what you want of a builder. Proof that you will get it from us is our record of service for such companies as: Avon Products, Inc., 11 contracts; Canada Dry Ginger Ale, Inc., 9 contracts; New York Telephone Co., 15 contracts; Chas. Pfizer & Co., 36 contracts.

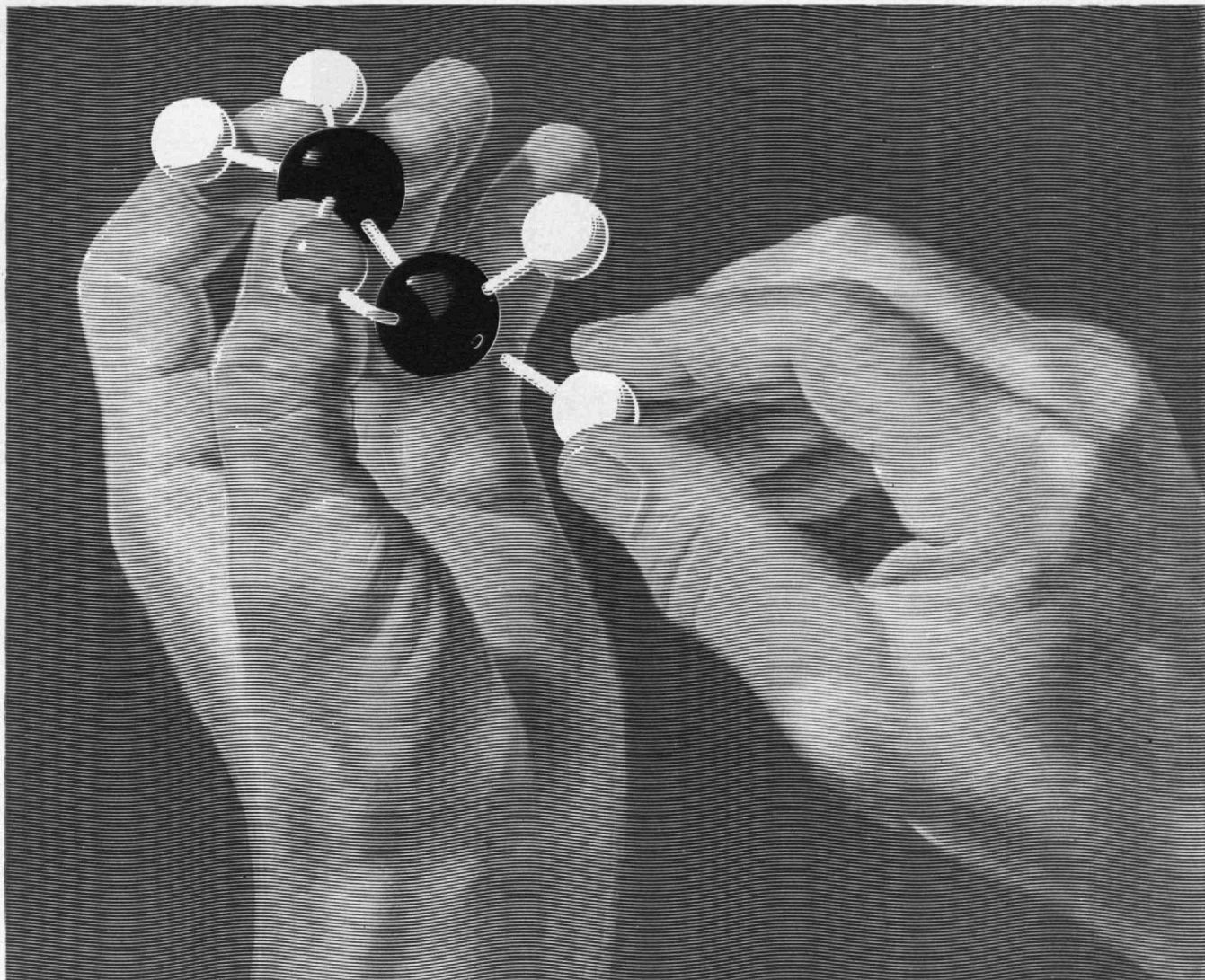
W. J. BARNEY CORPORATION

Founded 1917

INDUSTRIAL CONSTRUCTION

101 Park Avenue, New York

Alfred T. Glassett, '20, President



Molecular model of ethylene oxide—one of the basic building blocks in Union Carbide's chemistry.

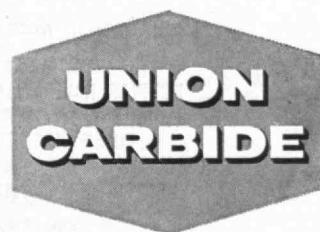
Helping to shape the future

Ever wonder what's behind the steady stream of new and better products we enjoy today? The answer is research by men and women with driving curiosity and bold imagination.

Synthetic chemicals created by the people of Union Carbide have helped make possible the latest wonder drugs, glamorous textiles, work-saving detergents, and fast-drying paints and lacquers. And in the ever-changing world of plastics, the work of Union Carbide scientists has helped bring you everything from scuff-resistant flooring and unbreakable phonograph records to transparent polyethylene wrapping that preserves the original flavor of foods.

These innovations are only a suggestion of the wonderful things that will come from tomorrow's research... the kind of research that's being carried out constantly in the laboratories of Union Carbide.

Learn about the exciting work going on now in carbons, chemicals, gases, metals, plastics, and nuclear energy. Write for "Products and Processes" Booklet B. Union Carbide Corporation, 30 East 42nd St., New York 17, N. Y. In Canada, Union Carbide Canada Limited, Toronto.



**...a hand
in things to come**



advanced airborne flight data system for **MANNED FLIGHT INTO SPACE** again emphasizes **creative** fulfillment for **SPERRY ENGINEERS**

When the hypersonic X-15 rocket aircraft attempts a manned flight into space, it will be equipped with one of the most advanced airborne flight data systems ever devised — a development of Sperry Gyroscope Company.

This highly advanced Sperry inertial system is one of a long series of creative accomplishments by Sperry engineers.

Back of these achievements: a unique combination of working conditions... on important, di-

versified assignments... with America's foremost engineers... for a company famed as an "engineer's firm". A company which has grown steadily for almost a half century, and whose engineers have grown with it, as proved by over 2,600 Sperry employees who are 15-year men. When you go with Sperry, you grow with Sperry. *If you're interested, not in an engineering job but in an engineering CAREER, check Sperry.*

Openings in many specializations including:

INERTIAL NAVIGATION SYSTEMS	
DOPPLER NAVIGATION	RADAR RECEIVERS
RADAR TRANSMITTERS	INFRARED SYSTEMS
PULSE CIRCUITS	SERVO SYSTEMS
ELECTRONIC PACKAGING	GYROS & ACCELEROMETERS
TRANSISTOR CIRCUITS	MICROWAVE ANTENNA DESIGN

Confidential Interviews

Contact Mr. J. W. Dwyer, Employment Manager

Saturday Interviews 8 A.M.-1 P.M.

Arranged by Appointment

SPERRY

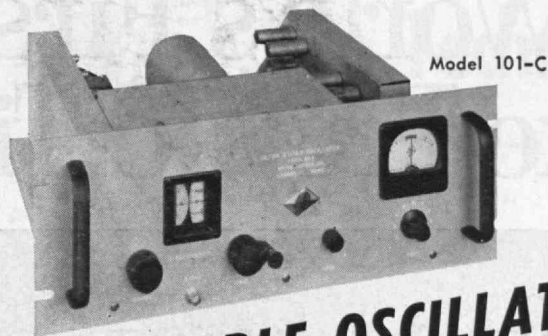
GYROSCOPE COMPANY

Division of Sperry Rand Corp.

Great Neck, Long Island, N. Y.

Fieldstone 7-3665

Stability: one part in a billion



ULTRA STABLE OSCILLATOR



with
Frequency Dividers and Multipliers

Hycon Eastern Ultra Stable Oscillator, Model 101-C, is a one megacycle signal source of proven exceptional stability. It is useful wherever precise time measurements or frequency control are required, as in reinsertion of carrier in suppressed carrier systems, astronomical measurements, navigation systems, geophysics or other critical applications.

Auxiliary highly stable outputs covering the spectrum from sub-audio to microwave can be made available through the use of Hycon Eastern FREQUENCY DIVIDERS, MULTIPLIERS, AND PHASE-LOCKED OSCILLATORS.

Write for Ultra Stable Oscillator Bulletin.

- **FREQUENCY STABILITY:** Drift rate less than 1 part in 10^9 per day after initial stabilization.
- **FREQUENCY:** 1 megacycle, variable over a range of 1 cycle. Available at other frequencies on special order.
- **CRYSTAL OVEN:** Stabilized to better than 0.01°C by temperature-sensitive resistance bridge and high-gain heater control circuit.
- **DISSIPATION IN OSCILLATOR CRYSTAL:** Stabilized at a power level less than one microwatt to insure ultimate stability.
- **2 OUTPUTS:** Sine wave—4 Volts RMS; Pulse—1 Volt.
- **OUTPUT IMPEDANCE:** 250 Ohms nominal.
- **POWER REQUIRED:** 150 Volts, 100 MA, Regulated DC, and 6.3 Volts, 3 Amperes, AC or DC. (Matching Power Supply available).



HYCON EASTERN, INC.

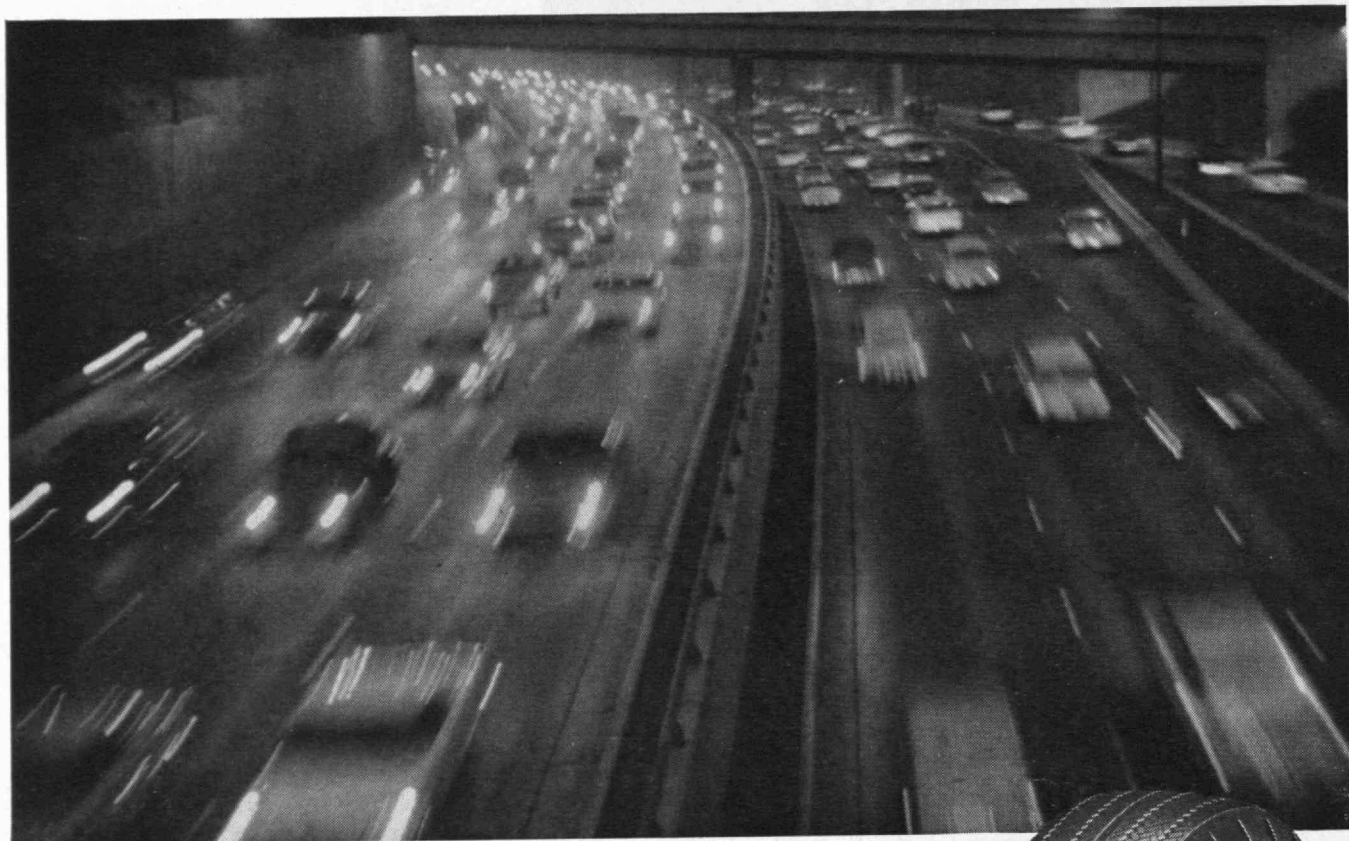
75 Cambridge Parkway

Dept. H

Cambridge 42, Mass.

Now...with new rubbers, new chemicals, new cords...Goodyear brings you:

The World's First Turnpike-Proved Tires!



Harbor Freeway. Photo taken at Wilshire Blvd. overpass in Los Angeles.

Many a tire that's been "getting by" around town will fail the test of the tire-eating turnpikes. New Turnpike-Proved Tires by Goodyear give up to 25% more safe mileage—no matter where you drive!

BEFORE we could build these tires, Goodyear scientists had to solve two vital problems:

Problem #1—tread rubber: At high speeds, ordinary tread rubber is literally eaten away.

But through *intimate mixing* of new chemicals and rubber molecules, Goodyear scientists found a way to produce today's longest-wearing tread rubber for today's toughest driving conditions.

Problem #2—tire cord: At high speeds, heat also weakens cord. The answer? Goodyear's new 3-T *triple-tempered* cord (Tyrex or Nylon) with strength and heat resistance other cords simply do not have.

Proof: On Goodyear's 140-mph test track at San Angelo, Texas, these tires *proved* they'll give you more safe mileage—no matter where you drive.

See them at your Goodyear dealer's. Goodyear, Akron 16, Ohio.



This year you'll be driving more than ever before on throughways, expressways and turnpikes—at high legal speeds. For greater safety, you need Turnpike-Proved Tires by Goodyear.

GOOD YEAR

MORE PEOPLE RIDE ON GOODYEAR TIRES THAN ON ANY OTHER KIND!

Watch "Goodyear Theater" on TV every other Monday evening.



The Technology Review

REG. U.S. PAT. OFF.

EDITED AT THE MASSACHUSETTS INSTITUTE OF TECHNOLOGY

CONTENTS FOR APRIL, 1959 VOL. 61, NO. 6

A PROFESSOR OF PERCEPTION Front Cover

An M.I.T. Photo Service portrait of
Harold E. Edgerton in his laboratory

25 YEARS AGO THIS MONTH 278

MAIL RETURNS 280

THE PRESIDENT HONORS A SWIMMER 286

*"Betsy" Schumacker receives a "Pat on the Back"
from a national magazine*

THE TREND OF AFFAIRS 287

Relating to the Massachusetts Institute of Technology

UNIVERSITIES IN TRANSITION By Arthur R. von Hippel 293

*The emergence of research centers logically leads to a new
tripartite structure of university organization able to cope
with tomorrow's problems*

THE GREAT STAIRWAY FOR SHIPS OPENS By J. J. Rowlands 296

*The St. Lawrence Seaway creates ocean ports 2,000 miles
inland and 602 feet above the sea. It will be used by the
largest vessels on the Great Lakes*

M.I.T.'S CAMPUS IN NEW JERSEY 302

*A photographic report on two new Field Stations of the
School of Chemical Engineering Practice*

TALK OF OUR TIMES 304

EDITOR: Volta Torrey; BUSINESS MANAGER: R. T. Jope; CIRCULATION MANAGER: D. P. Severance; EDITORIAL ASSOCIATES: Paul Cohen, F. W. Nordsiek, J. J. Rowlands; EDITORIAL STAFF: Ruth King, Winifred R. Sibley; BUSINESS STAFF: Madeline R. McCormick; PUBLISHER: H. E. Lobdell.

Published monthly from November to July inclusive on the twenty-seventh of the month preceding the date of issue, at 60 cents a copy. Annual subscription, \$4.00; Canadian and foreign subscription, \$4.50. Published for the Alumni Association of the M.I.T.; John J. Wilson, President; H. E. Lobdell, Executive Vice-President; D. Reid Weedon, Jr., William W. Carth, Jr., Vice-presidents; Donald P. Severance, Secretary-Treasurer. Published at Hildreth Press, Inc., Bristol, Conn. Editorial Office, Room 1-281, Massachusetts Institute of Technology, Cambridge 39, Mass. Entered as second-class mail matter at the Post Office at Bristol, Conn. Accepted for mailing at special postage rates provided for in Section 538, P. L. & R. Act of February 28, 1925. Copyrighted, 1959, by the Alumni Association of the Massachusetts Institute of Technology. Three weeks must be allowed to effect change of address, for which both old and new addresses should be given.

Events such as you see below have changed the air of undergraduate life at M.I.T., Dean John T. Rule, '21, recently told the Alumni Council (see page 322). This is Bobby Clotworthy, 1956 Olympic champion, clowning during an All-Institute Swimming Meet in the Alumni Pool.

Photo by David A. Cahlander, '59





President Stratton Honors a Distinguished Undergraduate Swimmer

Miss Mary Elizabeth Schumacker, '60, holder of regional swimming records and an Olympic hopeful, received a "Pat on the Back" award last month from Sports Illustrated. President Stratton presented the trophy to her at the New England Intercollegiate Swimming Meet on March 7 at the Alumni Pool. "Betsy" is a mathematics student from Devon, Pa.

"I wish she could compete for M.I.T.," says Coach Charley Batterman. "She can swim the 440 faster than anybody in school." She practices daily, and judges diving at men's intercollegiate meets. "I feel very much at home here," says Miss Schumacker. "The important thing is I'm getting the math training to teach and the swimming training to coach."



The Trend of Affairs

Radar Signals Travel From M.I.T. to Venus and Back

■ A radar finger reached out more than 28,000,000 miles last year from M.I.T. Lincoln Laboratory's Millstone Hill antenna and touched Venus twice.

Darting at light's speed, a train of pulses sent from earth returned to earth about five minutes later. Making certain, however, that what came back was indisputably an echo of what was transmitted has taken months. Could nature's quirks and noises have deceived the experimenters? There is less than one chance in 10,000,000 that they did.

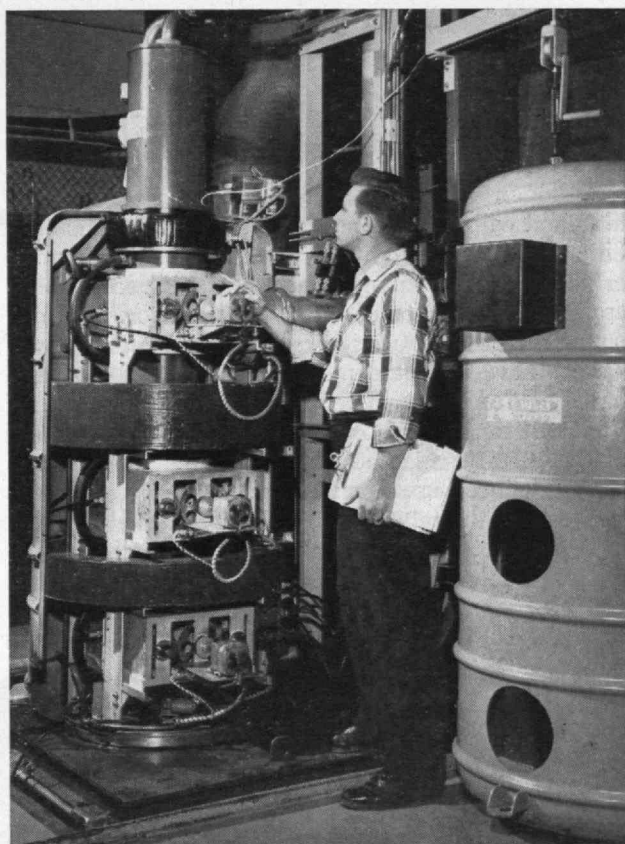
Venus and the earth were receding from each other. A signal sent at 2:21 P.M. Eastern Standard Time, February 10, 1958, returned 295.5065 (plus or minus .0005) seconds later. One sent at noon on February 12 returned 302.9842 seconds later, indicating that the two planets then were 696,640 miles farther apart than they had been two days earlier.

Venus was 100 times as far as radar had reached previously. The findings suggested that the astronomical unit (the mean radius of the earth's orbit around the sun) may be 1,200 miles less than the value that is given for it in the *Nautical Almanac* for 1958. Future radar work may enable the astronomers to determine the distances to various parts of the solar system more precisely.

The next close approach of Venus and the earth will be in September. The curtain of clouds that hides this neighbor's surface from optical telescopes may be penetrated again then by radar.

The pioneers, in actually touching another planet, credit their success to the development of a solid-state "maser" amplifier (which introduces very little noise), a high-power transmitter with a steerable antenna (their antenna is 84 feet in diameter), and sophisticated new methods of detecting weak signals (they used a large high-speed digital computer).

The transmitter was operated for about 4.5 minutes on each occasion, then shut off. A recording of what was received in the next five minutes was prepared in such a way that it could be searched for the transmitted signal by the computer. The pattern of the signal sent out consisted of about 8,000 points, and about 600 lengthy calculations were carried out to derive the curves that gave the results.



One of the Millstone Hill radar's klystron transmitter tubes.

The research team was led by Robert Price, '53, and Paul E. Green, Jr., '53, and included Thomas J. Gobllick, Jr., '58, Robert H. Kingston, Jr., '47, Leon G. Kraft, Jr., '49, Gordon H. Pettengill, '48, Roland Silver, and William Boyd Smith, '55.

The radar that they used was developed for the U.S. Air Force, just in time to track the first Sputnik. It was operated in the lower part of the ultra-high-frequency band, in the vicinity of 300-500 megacycles per second, with a pulse power of 265 kilowatts. The position and path of Venus were calculated from published astronomical data. The antenna then was adjusted to point the beam at the planet and follow it across the sky.

When emitted, the signals were 10,000,000 or more times as strong as when received. The returns were

so weak that individual pulses could not be detected or measured in the usual ways. Since it was foreseen that they would be buried in extraneous noise picked up from the sky, extraordinary pains were taken to reduce the noise generated within the system.

The solid-state maser, which kept the system's noise low, is a new kind of amplifier which Lincoln Laboratory has helped to introduce. It since has been used elsewhere to extend the range of radio telescopes, but this was the first recorded use of it in either radio or radar astronomy, and the only reported use of a maser in the ultra-high-frequency range. The greater sensitivity attained with it was the equivalent of a fourfold increase in transmitter power.

To facilitate finding the signal in the returns and measuring the time required for the round trip, the pulses that were sent out were coded. The transmitted signal was a train of short pulses spaced at intervals of time which were varied in a controlled manner. A special time-sequence pattern thus was created which could be used by the computer when it examined the returns. Each run yielded a train of several thousand returned pulses, individually too weak to be detected, but collectively identifiable by means of the pattern.

Although distances between planets have been determined with great accuracy in terms of astronomical units, they are not known with great precision in miles or meters. More observations will be necessary to ascertain these distances with the precision that men now desire for ventures into space. These first observations have indicated radar's potentialities—and also have yielded provocative hints about the surface of Venus. It cannot be observed with telescopes because of the planet's thick atmosphere. Radar returns, it is hoped, will tell us something in the future about the surface and the rate at which Venus rotates.

To appreciate what has been done, it is helpful to think of the earth and Venus as two ping-pong balls 100 yards apart. On this scale, the moon might be represented by a peanut, one yard from one of the balls. Radio signals were bounced off the moon in 1946. The distance to Venus was 100 times as great. It was spanned, moreover, with an instrument that can make very accurate measurements.

Indicative of the reaction to the news was this telegram:

MARCH 19, 1959, 8:31 A. M.
DR. CARL F. J. OVERHAGE, DIRECTOR
LINCOLN LABORATORY, LEXINGTON, MASS.

DR. KILLIAN HAS INFORMED ME OF THE CONFIRMATION OF YOUR CONTACT BY RADAR WITH THE PLANET VENUS. CONGRATULATIONS TO ALL INVOLVED FOR THIS NOTABLE ACHIEVEMENT IN OUR PEACEFUL VENTURES INTO OUTER SPACE.

DWIGHT D. EISENHOWER

New Center for Urban Studies

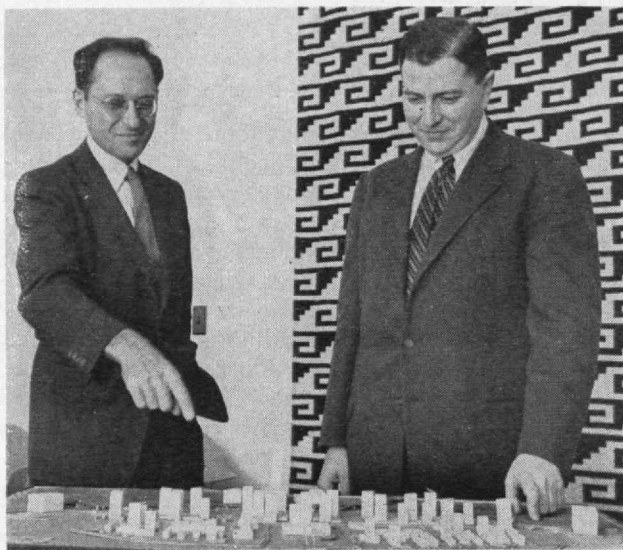
■ Nathan M. Pusey, President of Harvard, and Julius A. Stratton, '23, President of M.I.T., announced in March that their schools had established a Joint Center for Urban Studies to search for basic facts in the tangled problems of the growth of big cities.

"Our aim is to establish an international center for advanced research, for documentation, and for stimu-

lating inter-university efforts and collaboration in the urban field," said President Stratton.

"We are convinced that by combining our resources we can make outstanding contributions in urban studies, a field which has been seriously neglected," said President Pusey.

Carl F. Floe, '35, Administrative Vice Chancellor of M.I.T., is chairman of the new center's Administrative Committee, and Lloyd Rodwin, Associate Professor of Land Economics in the Institute's Department of City and Regional Planning, is chairman of the Faculty Committee which will set general policy for it. The director is Martin Meyerson, Williams Professor of City Planning and Urban Research at Harvard, who is also director of Harvard's present Center for Urban Studies.



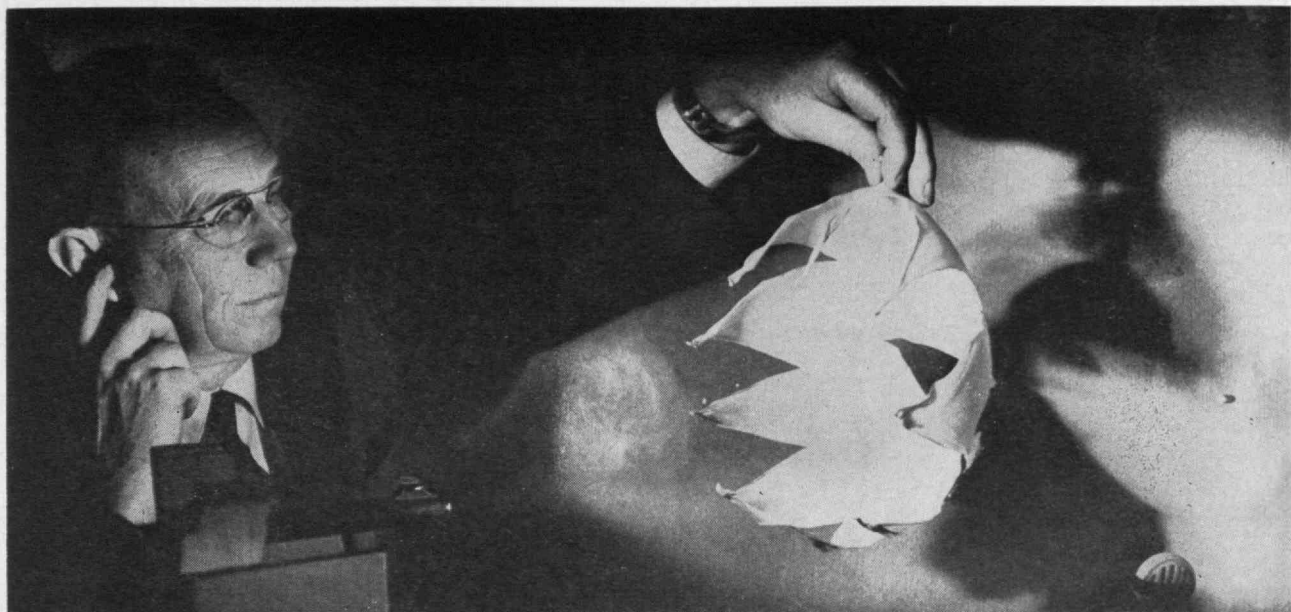
Lloyd Rodwin of M.I.T. (left) and Martin Meyerson of Harvard

The Center is expected to provide a stimulating environment for scholars engaged in urban research in this country and elsewhere. It will bring together the work of engineers, architects, lawyers, political scientists, philosophers, and experts in business, public health and other concerns of urban life, from the faculties of both schools.

An agreement signed by Presidents Stratton and Pusey emphasizes that, "Although urgent problems have led to demands for immediate effort, successful programs of action depend ultimately on the adequacy of knowledge of cities and regions. This knowledge at present is thin. Therefore, the principal responsibility of the Joint Center will be in basic research. An essential but secondary objective is to build a bridge between fundamental research and policy application at national and international as well as local levels. The findings of fundamental research must be made available through reports, books, seminars and other means valuable to the public official, the citizen leader, the professional and the private investor, here and abroad."

A Visiting Committee of outstanding national figures will be appointed soon.

A grant of \$675,000 from the Ford Foundation will provide for the initial financing. Headquarters will be at 66 Church Street in Cambridge.



This photo of a balloon and bullet was taken with the tiny light in the left hand of the man on the cover of this issue.

The microphone below the bullet fired the light. Bullets also have been photographed entering balloons and inside of them.

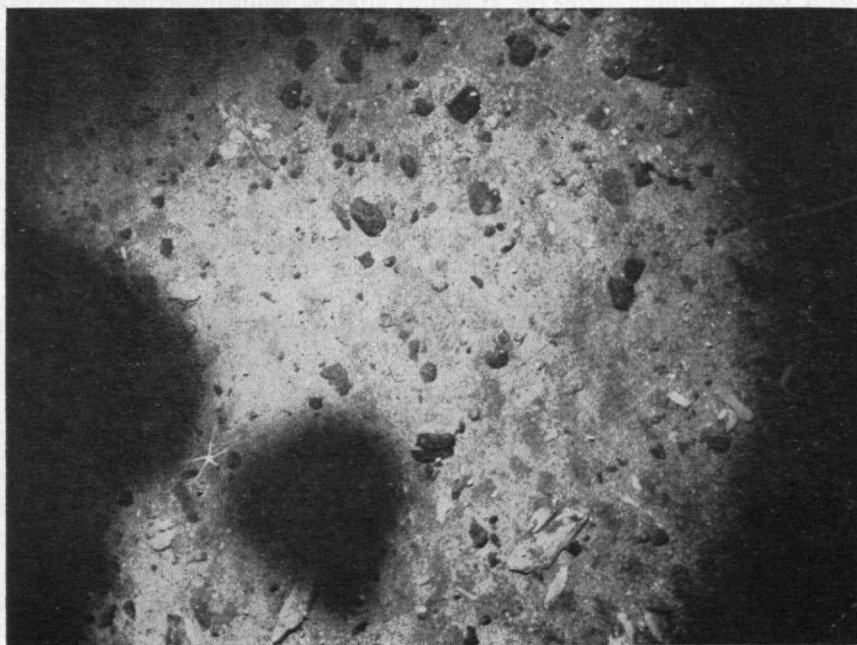
The Extension of Perception with Photography Continues

■ One thing has led to another so often in the laboratory of Professor Harold E. Edgerton, '27, at M.I.T. that it has become a mecca for explorers of everything from the ocean floor to teaching techniques. Prominent among its attractions are the big and little strobe lights with which "the doctor" is pictured on the cover of *The Review* this month. Prominent among its recent visitors was J. Y. Cousteau, the famous French underwater explorer and director of the Musée Océanographique de Monaco. The films that he showed one afternoon in Kresge Auditorium made many a man and boy late for dinner. More cameras and strobes for his ship *Calypso* and his submarine

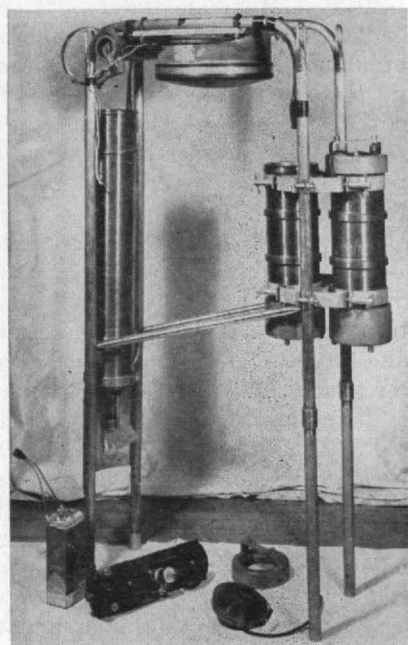
Saucer are in the process of being built at the Institute now.

Photographic speeds 100 times as great as that required to stop the bullet at the top of this page are attained now. Bits of exploding dynamite caps are being photographed, to help space explorers foresee the effects of bombardment by tiny particles when they sally forth to other planets. Simultaneously, Dr. Edgerton, chosen as Outstanding New England Engineer of 1958, is lending a hand to the experts in improving instruction in high school physics.

The additional projects to extend perception which lie ahead of Professor Edgerton usually seem endless.



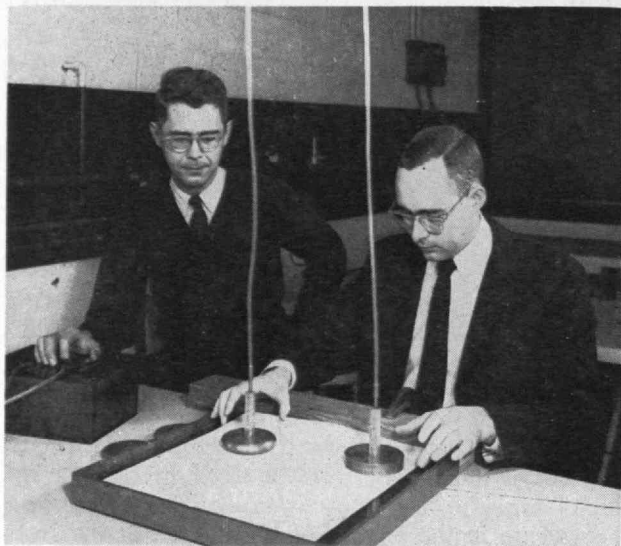
*Ocean floor at a depth of nearly 25,000 feet. Photo was taken from *Calypso* for National Geographic Society in Romanche Trench, off West Africa Coast. Tiny white spots may be living things. Sharpness of rocks puzzled experts. Mud caused dark blobs.*



Flashes from strobe unit at left will illuminate ocean floor, and two cameras at right will take stereoscopic views.

Students See Momentum Conserved

■ The pucks in the picture below are supported by thin films of compressed air that flow along their bottom surfaces. Because they are completely separated from the table top, the pucks move over it with very little friction. Students using them can see the principle of conservation of energy demonstrated more convincingly than previous generations saw it.



M.I.T. Photo

Robert G. Marcley (left) and William M. Whitney

This laboratory teaching apparatus won an American Association of Physics Teachers' \$500 first prize this year for William M. Whitney, '56, Assistant Professor in the Department of Physics, and Robert G. Marcley, '47, of M.I.T.

Optimized Flight in Space

■ In addition to charting interplanetary trajectories and devising means of staying on them, the M.I.T. Instrumentation Laboratory has coined a verb. It is "optimize," meaning "to cause the performance to be optimum." A self-optimizing person's work would be up to snuff no matter how much or fast his working conditions changed.

Obviously, there are few, if any, such persons, but a proud word such as "optimize" is needed to convey the ideas set forth in a recent report by H. Philip Whitaker, '44, Joseph Yamron, '49, and Allen Kezer, '56, on "Design of Model-Reference Adaptive Control Systems for Aircraft." Under this drab but accurate title, they have described a method of making the automatic pilot of an airplane or spaceship "self-optimizing."

The automatic pilots that now fly air liners to and fro were built to operate airplanes with known characteristics in known environments, which change only slightly, at speeds which soon will seem slow. The characteristics of these pilots have been carefully matched, in flight tests, with those of their aircraft. Flight-testing future vehicles, however, will be extremely expensive, and they will not only fly faster but will also encounter environmental changes far greater than men have previously mastered during their intensive efforts to conquer space.

On the Horizon

June 15, 1959 —

Morning: Inauguration of Julius A. Stratton, '23, as 11th President of the Institute.

Afternoon and Evening: 25th Alumni Day, with the Boston Pops Orchestra, again on the M.I.T. Campus.

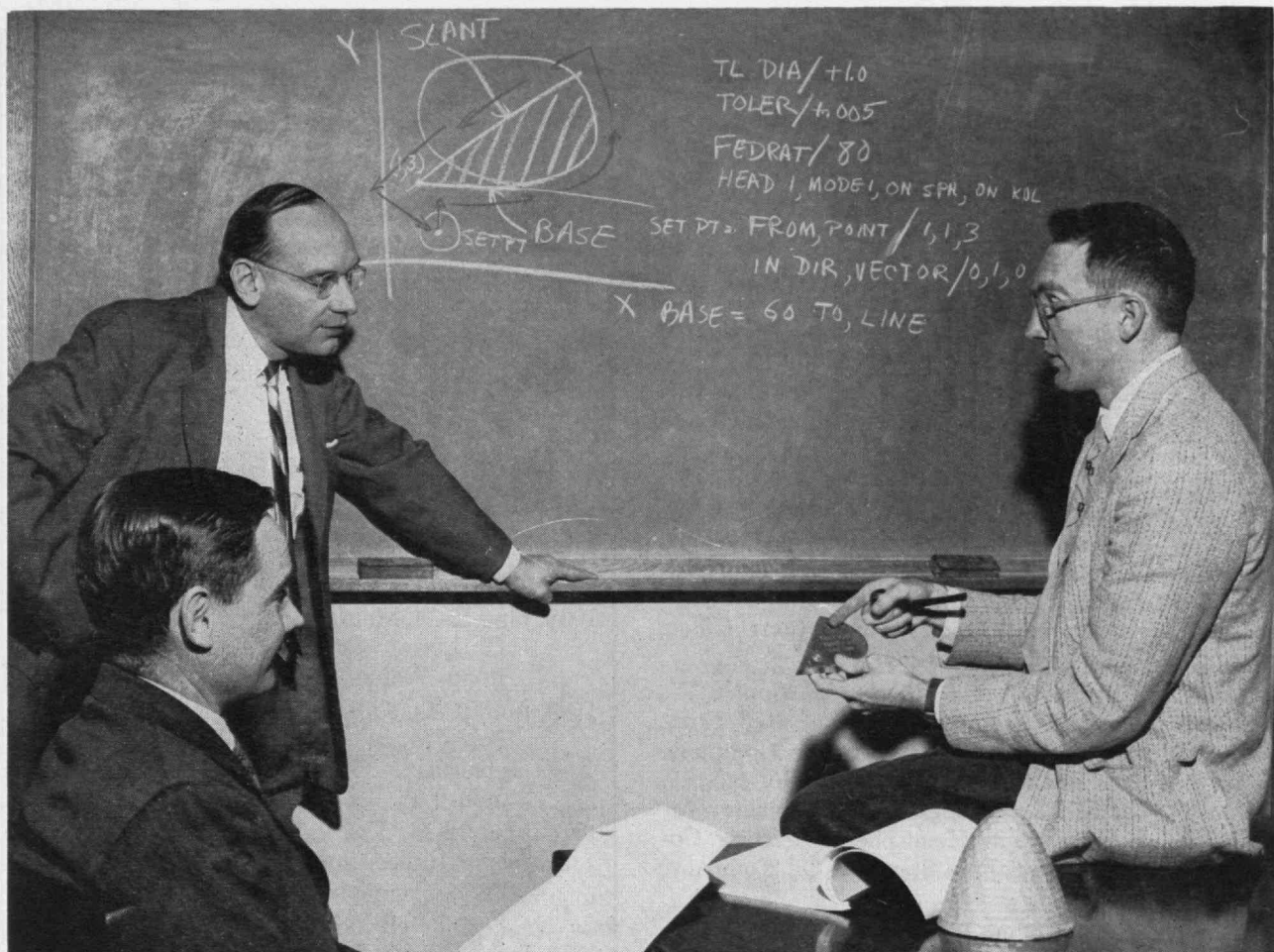
Suppose, for example, that you were cruising home from the moon at a satisfactory speed. Your ship would have to plunge from a near vacuum into an ocean of air that became increasingly dense. Its deceleration through this changing environment would have to be carefully controlled, but as you approached terra firma its responses to your guidance and application of the brakes would change. Your landing would be happier, certainly, if you could relax and leave the driving to a self-optimizing automatic pilot.

But suppose, for a moment longer, that you were doing the driving. It would be nice, in your new vehicle on this new road, to have a reference book handy that would tell you how to get the most out of your spacecraft every split second. Such a reference book — suitable for an automatic pilot's use — has been designed in the Instrumentation Laboratory. It is called a "performance reference model," and looks so commonplace that a Harvard man might easily mistake it for a bedside radio. It will be a boon to air-and-space-travelers, nevertheless, because it can be prepared on the ground, without flight tests, from the specifications of their vehicles to enable a robot to bring them home alive.

Into this little black box, the automatic pilot can feed the same orders that it is transmitting to the spacecraft. The differences between the way the spacecraft actually is responding to those orders and the way this electronic reference model says it should be responding, then can be ascertained. With this information in its wires, the automatic pilot will be much better off. It can so alter its adjustments and expectations that it will be adapted to the spacecraft's capabilities in the environment at the instant. Thus it can "optimize" the performance of the vehicle that it is flying.

This is not the only way in which an automatic pilot can be made self-adapting. The need for superior robots in the cockpits is so urgent that several laboratories have tackled the problem and found a variety of answers. One idea is to insert a test pulse, so the automatic pilot can "feel" what adjustments are needed. Another method has been dubbed the bang-bang system. Several systems are being tested in aircraft now.

The M.I.T. system uses normal operating inputs, and thus eliminates the possibility of disturbances from feelers. It also permits the self-adaptor to be independent of the automatic pilot's wiring, and this is an important advantage because it prevents a failure in the self-adapting circuitry from knocking out the autopilot. For these and other reasons, the Instrumentation Laboratory's investigators favor a model-reference control system, such as here described, to make the things that will fly tomorrow's aircraft and spacecraft "self-optimizing."

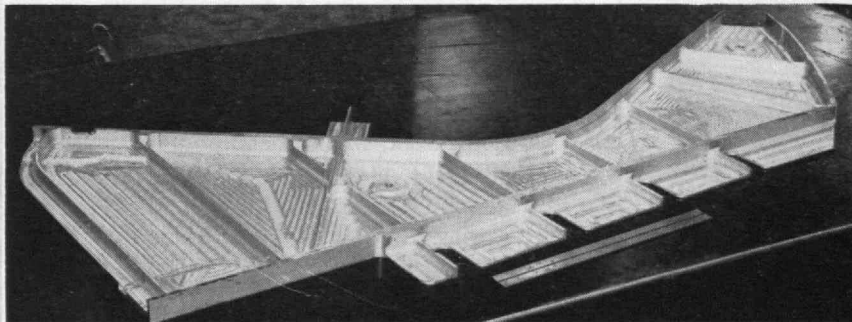


At blackboard is John Francis Reintjes, Director of the Servomechanisms Laboratory; in foreground, Donald F. Clements, '55, APT project engineer; facing them, Douglas T. Ross,

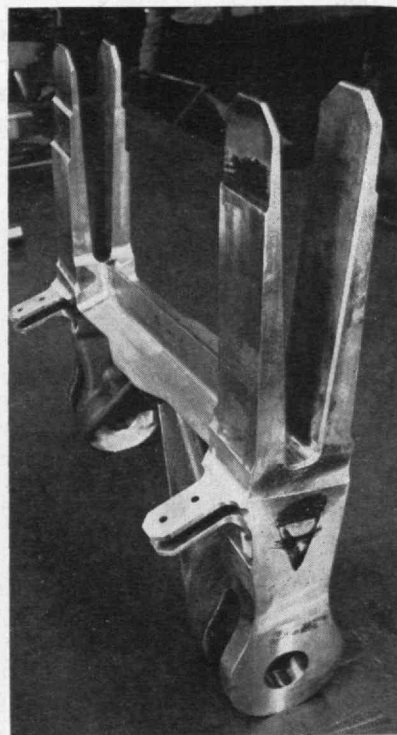
'54, head of the computer-applications group, describing items APT can turn out. A special language is used to instruct the computer, and some of these "APT words" are on blackboard.

The Advantages of APT

■ The importance of the APT (Automatically Programmed Tool) system, which the M.I.T. Servomechanisms Laboratory's staff has been kept busy explaining recently, can best be seen by studying the photos below. APT is considered a milestone in a quiet revolution which has been under way for 10 years in automatic production of aircraft-type parts. When this system is used, a digital computer prepares all tool-control data for actually producing a part from written specifications. The computer interprets design information and calculates appropriate directions for the tool-control system. This marriage of digital computers and automatic tools saves time, reduces costs, and strengthens our country.



A numerically controlled milling machine produced this part for a jet seaplane from an aluminum alloy in one-third of the time required for conventional milling. APT is another step forward in automatic production of components like this for aircraft.



This fitting for a jet airplane is another part typical of the complex components that APT will help to produce.

Individuals Noteworthy

■ Notable in the news since The Review's last issue were the 26 appointments, elections, or promotions presented below:

James G. Moir, '20, as Chief Engineer, New England Telephone and Telegraph Company . . . *Robert D. Patterson*, '20, as Vice-president—Finance, John Hancock Mutual Life Insurance Company, Boston . . . *Augustus B. Kinzel*, '21, as Vice-president, Engineers Joint Council . . . *Leonard D. P. Milano*, '26, as Executive Vice-president and Chief Executive Officer, Quebec Natural Gas Corporation;

Richard S. Briggs, '27, as Chief Engineer, Power Tube Division, Bomac Laboratories, Inc., Beverly, Mass. . . . *Russell P. Westerhoff*, '27, and *Stuart R. Fleming*, '32, respectively, as Chief Engineer and as Manager of the Engineering Department, Ford, Bacon, and Davis, Inc. . . . *W. Spencer Hutchinson, Jr.*, '29, as Director of the Source Material Procurement Division, Grand Junction Operations Office, U. S. Atomic Energy Commission;

Jerry A. Cogan, '32, and *Charles W. Smith*, '35, respectively, as a Director and as Chief Staff Engineer, Esso Research and Engineering Company, affiliate of Standard Oil Company (New Jersey) . . . *Ralph D. Patch*, '32, as Regional Co-ordinator for Refining for the Eastern Hemisphere, Refining Co-ordination Department, Esso Standard Oil Company, (New Jersey);

John L. Person, '32, as Head, Metropolitan Sewer District, Louisville, Ky. . . . *Rolf V. Wallin*, '32, as Vice-president—Engineering, Union Carbide Chemicals Company, division of Union Carbide Corporation . . . *Charles E. Fulkerson*, '33, as a Director, Citizens and Manufacturers National Bank, Waterbury, Conn.;

M. Scott Dickson, '34, as Vice-president, W. and L. E. Gurley, Troy, N.Y. . . . *Frank W. Schoettler*, '36, as President, Struck Construction Company, Louisville, Ky. . . . *David A. Wright*, '38, as Chairman of the Board of Directors, American Waterways Operators, Inc.;

William R. Carlisle, '39, as Executive Vice-president, H. L. Yoh Company, Inc., Philadelphia . . . *Wayne J. Holman, Jr.*, '39, as a Trustee, New York University . . . *John W. Pocock*, '39, as Chairman of the Executive Committee, Booz, Allen Applied Research, Inc.;

Francis W. Sargent, '39, as Executive Director, Outdoor Recreation Resources Review Commission, Washington, D.C. . . . *Rear Admiral Peter V. Colmar*, '40, as Commander, Fifth Coast Guard District, Norfolk, Va. . . . *Luke S. Hayden*, '41, as President, City Savings Bank, Pittsfield, Mass.;

Kennett W. Patrick, '46, as President, Consolidated Systems Corporation, subsidiary of Consolidated Electrodynamics Corporation, Pasadena, Calif. . . . *Herbert S. Brown, Jr.*, '47, as Supervisor of Project and Flight Operations, Sikorsky Aircraft Division of United Aircraft Corporation . . . *Arye Y. Grozbord*, '53, as Vice-president, Assistant General Manager, and Director, Universal Cooler Co., Brantford, Ont.

(Continued on page 316)

Class Reunions in 1959

- 1894 June. Exact date and place not determined. Samuel C. Prescott, Secretary, Room 16-317, M.I.T., Cambridge 39.
- 1899 June 13. In Cambridge or Boston. William A. Kinsman, President, 348 High Street, Newburyport.
- 1901 June. In Dedham. Robert M. Derby, reunion chairman, Brookside Farm, Williamstown.
- 1904 June 14. Brae Burn Country Club, Newton. Reunion cochairmen: Carle R. Hayward, Room 35-304, M.I.T., Cambridge 39; Eugene H. Russell, Jr., 82 Devonshire Street, Boston 9.
- 1907 June 12-14. Oyster Harbors Club, Osterville, Mass. Philip B. Walker, Secretary, 18 Summit Street, Whitinsville.
- 1908 June 12-14. Melrose Inn, Harwich Port, Mass. H. Leston Carter, Secretary, 14 Roslyn Road, Waban 68.
- 1909 June 12-14. 50th reunion. Snow Inn, Harwich Port, Mass. Francis M. Loud, reunion chairman, 351 Commercial Street, Weymouth 88.
- 1914 June 12-14. The Publick House and Treadway House, Sturbridge, Mass. Charles P. Fiske, reunion chairman, Cold Spring Farm, Bath, Maine.
- 1916 June 12-14. Chatham Bars Inn, Chatham, Mass. Harold F. Dodge, Secretary, 96 Briarcliff Road, Mountain Lakes, N.J.
- 1919 June 12-14. Wentworth-by-the-Sea, Portsmouth, N.H. Wilfred O. Langille, reunion chairman, Diehl Manufacturing Company, Finderne, Somerville, N.J.
- 1924 June 12-14. Oyster Harbors Club, Osterville, Mass. Paul J. Cardinal, reunion chairman, 195 Midland Avenue, Montclair, N.J.
- 1929 June 12-14. Bald Peak Colony Club, Melvin Village, N. H. Francis M. Mead, reunion chairman, 15 Waterhouse Road, Belmont.
- 1934 June 12-15. 25th reunion. Baker House, M.I.T. Cambridge. Malcolm S. Stevens, reunion chairman, Room 1-139, M.I.T.
- 1939 June 12-14. Snow Inn, Harwich Port, Mass. William F. Wingard, reunion chairman, 26 Blithedale Street, Newtonville 60.
- 1944 June 12-14. Chatham Bars Inn, Chatham, Mass. Reunion cochairmen: (2-44) Burton A. Bromfield, 72 Woodchester Drive, Weston; (10-44) Kenneth G. Scheid, 24 Lee Street, Marblehead.
- 1949 June 12-14. Hotel Curtis, Lenox, Mass. Reunion co-chairmen: Russell N. Cox, 103 Loring Road, Weston 93; Kemon P. Taschioglou, Polaroid Corporation, 730 Main Street, Cambridge 39.
- 1954 June 12-14. Cliff Hotel, Scituate, Mass. Robert E. Anslow, reunion chairman, 935 Massachusetts Avenue, Lexington 73.

Universities in Transition

Our universities today present a panorama of perplexities. Emergence of research centers logically leads to a new tripartite structure of the university organization, able to cope with the problems of tomorrow.

by ARTHUR R. von HIPPEL

The author's plea for Interdepartmental Research Centers, vividly advanced in two previous articles — "Molecular Engineering" (March, 1956) and "Answers to Sputnik?" (March, 1958)—is here brought to an inspired climax. — Ed.

Panorama of Perplexities

WHAT has happened to the old ivory tower? Telephones ring incessantly; visitors swarm in droves through the laboratories; meetings crowd meetings; an ocean of papers blots out the horizon; and the wise men, once quietly guided by the star of Bethlehem, now frantically count time by the star of Moscow. Yet this turmoil is of our own doing. Universities showed that research pays, and huge laboratories sprang up for profit; universities devised new weapons, and countries bristle with laboratories for defense. What an outcome of a search for understanding of nature and for peace in our time!

Paradise lost; why not leave, instead of angling desperately for elusive government funds to fend off bankruptcy of our projects? Over there lures industry with high salaries and excellently equipped laboratories which offer the academic spirit a new home. Here we move at a snail's pace with untrained help toward new goals and watch in frustration those streamlined research machines, powered by university's educating and scouting, bulldoze broad highways past us into no-man's land.

The professor stays. He wants to help young people grow; to work on problems of his choosing; to live in the company of scholars. He hopes that universities will fight for truth and stand their ground fearlessly and without bias. His is the only stronghold of our times where prejudice dissolves and nations meet as comrades in friendly competition.

But is this still a stronghold of the mind? Relentlessly, as everywhere, the gap increases between administration and the working level. On the one side are the specialists, deeply immersed in studies; on the other, the policy makers with no time and means for proper communication. Between both parties stretches an ever-lengthening chain of command, transforming itself into an obstacle course preventing needed decision — *Parkinson's law* in action.

To beat this law, conditions must be changed. We must find time and fellowship for synthesis of knowledge in all fields. The visions then emerging are large scale and can be understood by others; when inspired, they should lead to proper action.

The universities should show the way. They feel the drive for synthesis of knowledge but seek prescriptions that have served before. This is no situation previously encountered; this means rebuilding! A new university strives to emerge, concentrating its pioneering tasks in interdepartmental research centers. Here are the new partners required by administration for the formulation of imaginative policy. Through such Centers, freely growing in spirit of philosophical thinking and with full voice and responsibility in their realm of competence, universities can be citadels of strength. Let us visualize how they might develop.

The Emergence of Research Centers

In a university, natural research units form spontaneously around scientists and engineers who dedicate their lives to the development of some challenging area of knowledge. If such programs and interest



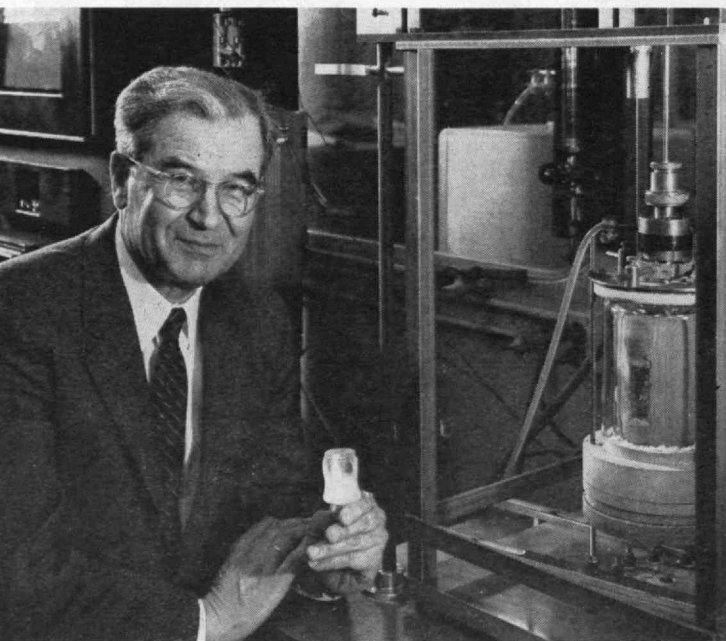
M.I.T. Photo

Dr. von Hippel, Professor of Electrophysics, is the founder and stimulating director of the Laboratory for Insulation Research.

partly overlap and together open much broader vistas of understanding by which the individual contributions assume a deeper meaning, the prerequisites exist for forming a "Research Center" by voluntary federation.* A "Research Center," as visualized here, thus consists of a cell structure of individually functioning laboratories, each with an inspiring research program, but together creating a new spiritual entity.

Any concentration of men and facilities invites the temptation to use it as an instrument of power if no safeguards are provided. The safeguards for a university are freedom of the individual professor and decentralization of responsibility. A "Center" needs no director as commander in chief but as a friend and understanding discussion partner of the individual experts who are thinkers in their own rights. A "Center" should not have an over-all budget, from which the support can be parceled out to the various laboratories on the basis of likes and dislikes. Freedom, under present conditions, can only be preserved if each project receives its direct contractual support, earned by the merit and strength of its research program. A "Center" should not create joint facilities with the approach of a supermarket: large units produce cheaper service. This slogan of mass production is not true for universities. Small machine shops, owned by individual laboratories or laboratory groupings which can keep them busy full time, are preferable to one large one because the machinists remain trusted personal friends and helpers of staff and students. Business managers of small laboratory units can act as educators in their own realm of responsibility and, as helpers of the scientists, take over the nonscientific work load on a personal basis, in contrast to an over-all management operating anonymously through an echelon of employees. We must renounce the usual trappings of centralizing power with its means of coercion and rewards.

* The author cannot judge how far these considerations are relevant for the humanities.



M.I.T. Photo

Dr. Alexander Smakula is shown with one of the many types of crystals in the Laboratory for Insulation Research.

What then will pull such an aggregate of laboratories together and make it much stronger than its parts? The primary motive must be that the scientists and engineers involved enjoy each other's company and that their projects draw stimulation from each other's existence, with full respect for mutual privacy and independence. If these prerequisites exist, everything else follows automatically: mutual support with tools and knowledge; creation of joint facilities that are too expensive for, or too rarely used by, individual laboratories; acquisition of an integrated space area, built for the needs of the "Center" and the strategical placing of its tools; and handling of joint affairs through a steering committee.

The scope of these joint affairs immediately shows the new strength such a coalition would acquire. The "Center" as a whole could act through its interdepartmental faculty with a breadth of understanding of large-scale problems that no individual can command. This integrated knowledge would express itself logically in the creation of library facilities and of an information center which organizes the stream of disjointed reports and publications for a whole area into readily accessible, prescreened information. Such "living information," continuously tested by and drawn from expert knowledge, is needed for the defense effort of our country and for long-range planning. There is no merit in augmenting the already unmanageable flood of papers by setting up new information and translation bureaus far from the firing line.

A "Center" would be expected to create an inspiring program of interdepartmental courses for the graduate school and to provide an atmosphere of wide-ranging philosophical thinking for doctorate and postdoctorate research. It would offer government and industry an unequalled opportunity to reward and refresh their qualified scientists and engineers by a period of advanced integrated research experience through a fellowship program. While not actively involved in the undergraduate school, a Research Center would provide a ready forum for the discussion of a teaching program that introduces the undergraduate student into its world of expanding knowledge and prepares professors for such teaching.

The New Tripartite Structure

If the university of tomorrow is built as a three-way partnership — Administration, Departments, and Research Centers — this structure will function effectively only when evenly balanced.

The research centers, newcomers to the scene, need a congenial faculty of highest competence to co-operate as nonpartisans in a challenging interdepartmental enterprise. They must have the right to propose appointments which assure the efficiency of existing laboratories and provide nuclei for new ones where required. This right is balanced by the obligation of finding the money for their operations.

The departments cannot be expected to greet a priori the advent of research centers with joyful composure. After all, the pulsing scientific life seems to emigrate, and in essence only the educational problems of the undergraduate and graduate school are left. Actually, however, the loss is only a fictitious one: no department head would attempt today to direct the various research projects falling to his administra-

tive area. His job is to help create conditions for healthy growth, and this opportunity in the university of the future is expanding. The professors of the centers will, in general, be simultaneously members of the various departments and deeply responsible to the departments for the education and welfare of their students. It needs no prophet to foresee that only those departments of science and engineering will remain strong and able to attract first-rate students which show pride, affection, and active support for the research centers and their wide-ranging activities. The appointment of professors for the Centers will not become a football of prerogatives if the departments reserve the right of approval for prospective appointees in their fields, and the centers assume the salary requirements resulting from such appointments. A fraction of the overhead charges presently paid by the research projects for over-all university expenses could serve this purpose.

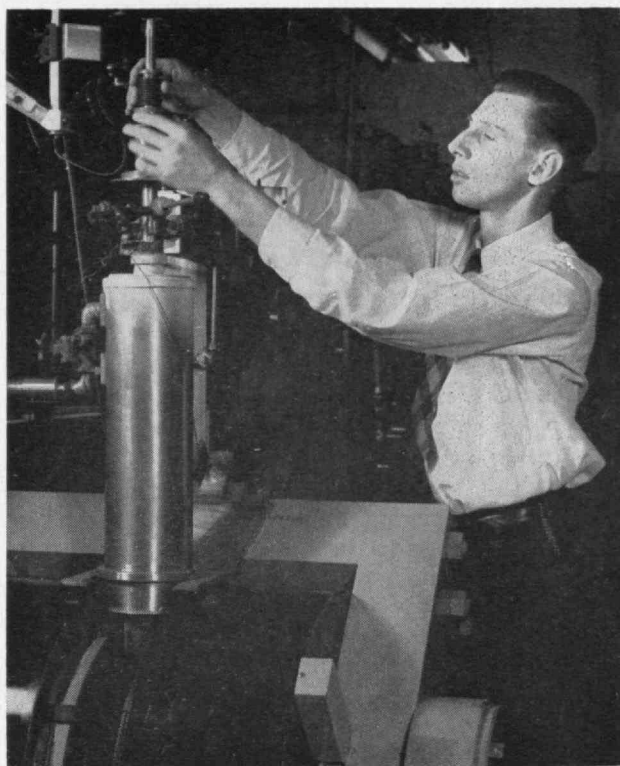
Administration holds the key position in helping the emergence of research centers as responsible allies. Here is its unique chance to redistribute the burden and to strengthen the universities as a great moral power, where each partner speaks about his own tasks and visions with imaginative conviction.

A "Center for Modern Materials Research"

Drums are being beaten for the creation of one "Super-Center for Materials Research" under government auspices. Instead of such artificial concentration of our national resources, the organic growth of university centers for materials research might be supported; this would serve the additional need of educating tomorrow's generation. In sketching here a prototype "Center for Modern Materials Research," the author hopes to sharpen the preceding general considerations by visualizing a center structure in his own field of knowledge.

Fundamental research in the last few decades has created a deeper understanding of the laws of "Molecular Science" and of their applications to engineering problems, "Molecular Engineering." A broad new discipline emerges, "Molecular Science and Molecular Engineering," comprising the structure, formation, and properties of atoms, molecules, and ions; of gases, liquids, solids and their interfaces; the designing of materials and properties on the basis of this molecular understanding; and their imaginative application for devices. All scientists and engineers dedicated to this type of modern materials research become natural allies.

When thinking about materials from the point of view of structure and binding forces, one finds that their electric, magnetic, and mechanical parameters are the most fundamental ones. These should be measured and interpreted as functions of temperature and pressure, frequency and field strength, structure and composition. From the standpoint of classical approaches, this prescription has no revolutionary implications. There exists a formidable array of materials and of testing machines that record responses under stress and pressure, heat, chemical attack and other abuses in slow and fast stages up to final destruction. Still, for our objectives these data are in general useless because they are taken on the wrong objects with the wrong methods. We need materials composed of



M.I.T. Photo

Magnetic resonance spectra are measured in the Laboratory for Insulation Research by Assistant Professor Perry A. Miles.

specified atoms and molecules in prescribed arrangements, carefully preanalyzed by nondestructive means and then investigated in preselected areas and directions with a variety of molecularly meaningful methods. In consequence our Center needs facilities for growing crystals, preparing defined multicrystalline samples of metals and ceramics, producing polymers, glasses and liquids to order, handling gases from vacuum to high compression, and investigating all these materials with tools of tremendous sensitivity and selectivity.

Faced with this formidable prospect, one is inclined to look for an escape clause: Why not set up one crystal-growing factory for the country, from which the desired materials stream on conveyer belts, ready for scientists and engineers with bright ideas? Unfortunately, we demand more than picking out diamonds for engagement rings. We need crystals built as perfectly as possible to reach standards for ultimate performance. Vice versa, crystals with accurately prescribed imperfections are required, since the most startling changes in behavior result when atoms or rows of atoms are displaced, electrons or electron defects introduced, addition agents added, substitution made or lattices laced with interfaces and surface layers. Much of the solid-state work done today is of little value because carried out on undefined materials.

The conclusion is that producing materials for fundamental studies cannot be a simple supply operation; it is a scientific activity closely integrated with the search for answers to specific questions. There should be primary crystal-growing laboratories, specializing in problems of the growth processes as such and in the molecular analysis of the specimens result-

(Concluded on page 314)

The Great Stairway for Ships Opens

The St. Lawrence Seaway creates ocean ports 2,000 miles inland and 602 feet above the sea; the largest lake ships will use it, and bulk cargoes will constitute most of its traffic

by J. J. ROWLANDS

It was the plunging rapids of the St. Lawrence River that stopped Jacques Cartier, in the Sixteenth Century, when he sailed 1,000 miles up the great Canadian waterway in the belief that he had discovered the legendary passage to the Orient. This month the St. Lawrence Seaway will be opened to navigation. All but the world's largest ships then will be able to steam past the rapids, and move step by gigantic step through the Great Lakes to ports more than 2,000 miles inland and 602 feet higher than the Atlantic Ocean.

The Seaway is not only the fulfillment of a dream of three centuries and a magnificent engineering achievement, but also a significant monument to international friendship and co-operation.

As a two-nation project, it includes both the new deepwater canal system and power plant in the upper St. Lawrence, and the long-established Welland Canal between Lake Ontario and Lake Erie. The locks of the new Seaway follow with only slight variations the dimensions originally established for those of the Welland Canal, having a length of 860 feet, a width of 80 feet, and a depth of 30 feet over the sills. The entire waterway, as well as channels in the Great Lakes and through the Sault Ste. Marie Canal which connects Lakes Superior and Huron, will have a depth of at least 27 feet, and this will permit the largest of the Great Lakes grain carriers to take full cargoes to the sea.

The St. Lawrence River, from Montreal's Harbor eastward to the Gulf of St. Lawrence, already has a uniform depth of 35 feet, with an average flow of 241,000 cubic feet per second. Because the river carries no sediment and flows through a rocky channel for most of its course, maintenance of depth for navigation is not a serious problem. The distance from the mouth of the St. Lawrence to Europe is approximately 1,000 miles less than the voyage from eastern United States ports; from Chicago to Liverpool by way of the Seaway is only 4,120 miles.

As early as 1700, attempts were made to build a waterway, without locks, around the Lachine Rapids to Lake Louis, some 15 miles upstream from Montreal. This effort was abandoned because of its cost, but several small canals were built later around sections of the rapids.

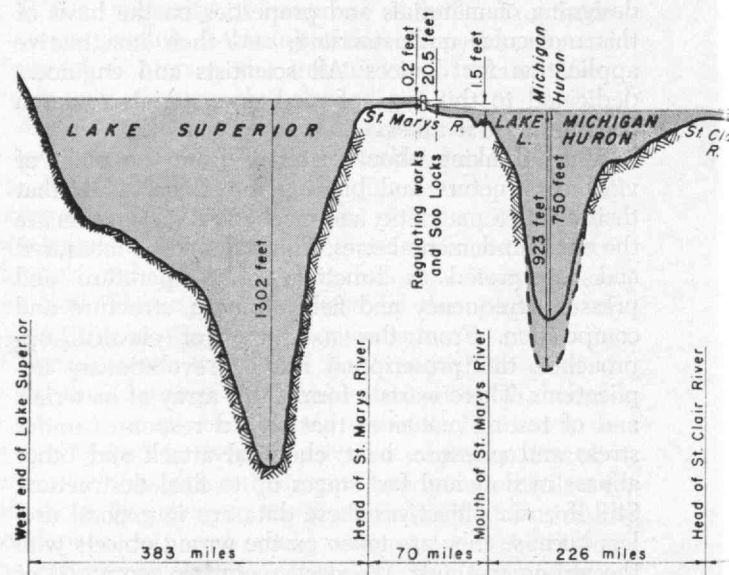
As trade developed, the need for completing a through waterway between Montreal and Lake On-

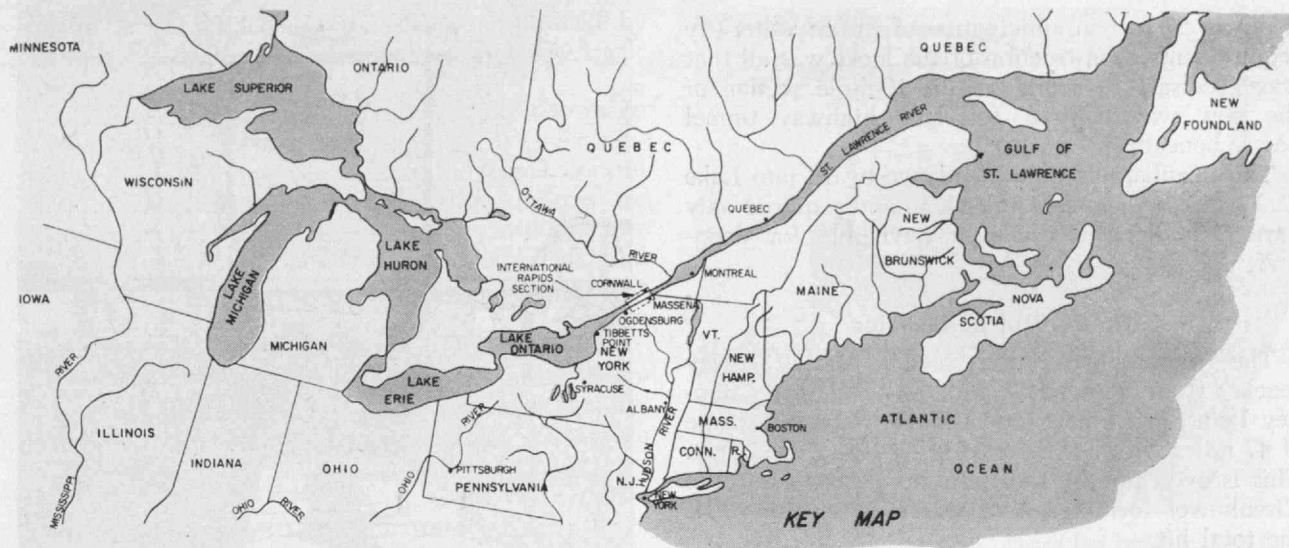
tario became more urgent. Finally, in the spring of 1821, work was started on a canal 20 feet wide, with locks 110 feet long and four feet deep, to by-pass the Lachine Rapids. This 15-mile section along the north shore of the river was completed in 1825, the year that the Erie Canal was opened, and a navigable waterway from deepwater at Montreal to the level of Lake Ontario was completed in 1848. This canal system later was brought to a depth of nine feet, and in 1901 to 14 feet, a depth which limited its use to vessels about 250 feet long, with 43-foot beams and 2,500 tons capacity.

How the Cost Rose

The new Seaway is much more capacious. It will accommodate ships 768 feet long and 75 feet across the beam, with a bulk capacity of 25,000 tons, and an operating draft of 24½ feet. These dimensions open the Great Lakes to 80 per cent of the world's shipping.

A whole series of canals has been superseded by the St. Lawrence Seaway. These include the one by-passing the Lachine Rapids, the Soulanges Canal which carried shipping around the Cascades, Cedar, and Coteau Rapids, between Lake St. Louis and Lake St. Francis, and the Cornwall Canal which overcame the Long Sault Rapids.





In 1930, when President Hoover opened the Ohio River to nine-foot navigation from Pittsburgh to Cairo, Ill., he said: "One of the most vital improvements to transportation on the North American Continent is the removal of the obstacles in the St. Lawrence River to ocean-going vessels inward to the Great Lakes." As he spoke, Canada was completing the great Welland Canal, and Mr. Hoover estimated that, after disposal of electric power, construction of the St. Lawrence River projects could be completed for less than \$200,000,000.

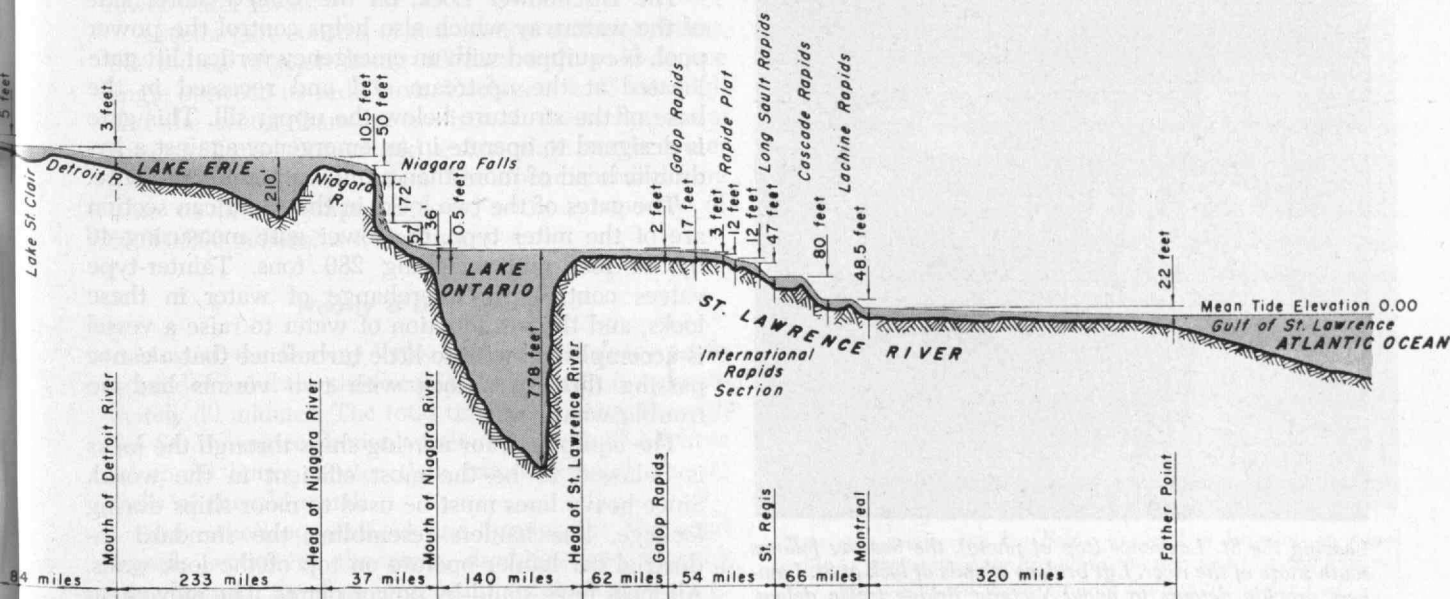
But that was 29 years ago. The cost of the Seaway now being opened will be more than a billion dollars, of which \$600,000,000 will be for hydroelectric development, and \$450,000,000 for the waterway. Canada will pay two-thirds of the total cost of the project. Her share for the Seaway, including improvements in the Welland Canal, will be approximately \$329,000,000, while her share for power development will be about \$300,000,000.

The new Seaway begins its 226-foot climb to Lake Ontario just below Montreal Harbor and follows the south shore of the river to Lake St. Louis, a distance of 20 miles. The old canal lies on the north side of

the river. The new route was chosen to avoid congestion in Montreal Harbor and to permit further expansion of the harbor and development of new industrial areas. The new route also simplifies highway and rail communications between Montreal and the south shore.

To provide the standard overhead clearance of 120 feet, a section of the great Jacques Cartier Bridge over Montreal Harbor was raised. Vertical lift bridges were provided at the crossing of the famous old Victoria Bridge, a few miles upstream. Two other bridges, the Canadian Pacific and the highway crossings at the head of the Lachine Rapids, were modified. A new international suspension bridge also spans the Seaway now near Cornwall.

The first lock in the Seaway is at St. Lambert, Quebec, three miles upstream from the entrance; and the second, Côte Ste. Catherine lock, is 11 miles above the entrance. Two large turning basins are located in this section, which brings the canal to Lake St. Louis and clear sailing to the Beauharnois locks, 12 miles to the west. Here the Seaway rises through two locks, reaching the level of the Beauharnois Power Canal which was built in 1932 with a



depth of 27 feet in anticipation of future waterway requirements. Construction of the locks was all that was necessary to complete this 16-mile section of the new waterway. A four-lane highway tunnel passes beneath it.

The Beauharnois Canal leads westward into Lake St. Francis, which is 29 miles long and required only partial dredging to make it navigable for deep-draft vessels.

Up 92 Feet in 47 Miles

The International Rapids section of the Seaway reaches from the head of Lake St. Francis to Chimney Point, just below Ogdensburg, N.Y., a distance of 47 miles with a difference in elevation of 92 feet. This is overcome by the Bertrand H. Snell and the Eisenhower locks, each of which raises ships half the total lift.

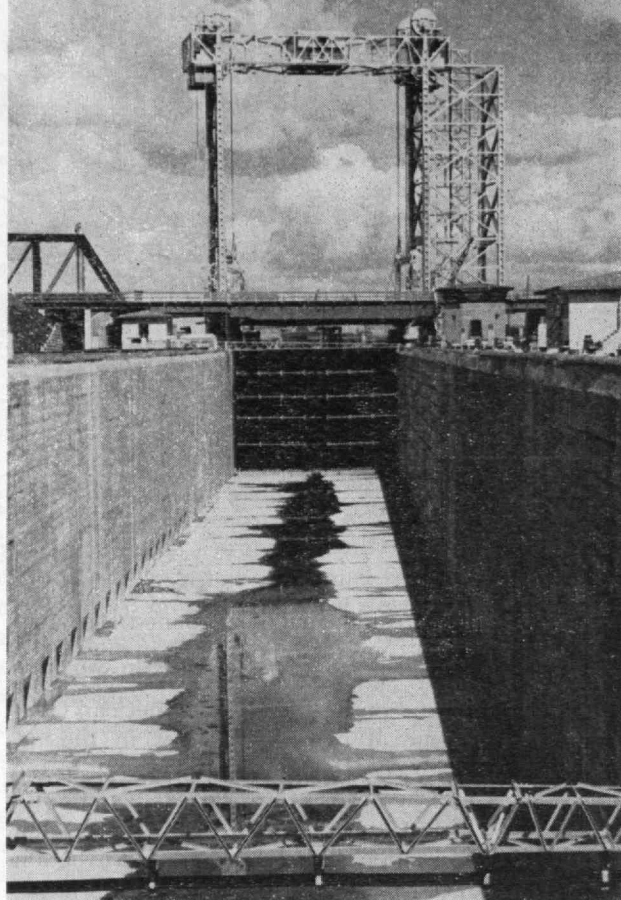
The Eisenhower Lock, 860 feet long, brings vessels to the level of Lake St. Lawrence, a vast new power pool 30 miles long and four miles wide created by Long Sault Dam. This structure is 2,960 feet long and 120 feet high, and stands between the west end of Barnhart Island and the New York State shore of the river.

The power dam is between the lower or eastern end of Barnhart Island and the Canadian shore. It is 3,300 feet long and its 32 turbine generators, half belonging to the United States and half to Canada, have a total capacity of 2,200,000 horsepower. The plant, second only to Grand Coulee in capacity, is operated by the Power Authority of the state of New York and the Hydro Electric Power Commission of Canada.

At the western end of Lake St. Lawrence, 25 miles upstream from the power dam and on the Canadian side of the waterway, is Iroquois Dam and the last lock which lifts ships to the level of Lake Ontario. The dam and lock are part of a water-control system designed to maintain the lake at the desired level for power production at all seasons.



Leaving the St. Lawrence (top of photo), the Seaway follows south shore of the river. Lift bridges at ends of lock at St. Lambert provide detours to avoid Victoria Bridge traffic delays.



In St. Lambert Lock opposite Montreal, ships take 15-foot step toward level of Lake Ontario. In foreground is a fender boom supporting steel cables which could stop a 30,000-ton ship.

As a special safety feature, all of the Seaway locks have pairs of wire rope fenders across the upper and low ends. These guard the locks against damage by vessels moving out of control beyond the prescribed limits for mooring. If struck by a ship, a fender cable unwinds from two drums working against four friction brakes. These fenders are designed to stop a 30,000-ton vessel moving three miles an hour.

Emergency Provisions

The Eisenhower Lock, on the United States side of the waterway which also helps control the power pool, is equipped with an emergency vertical lift gate located at the upstream end and recessed in the base of the structure below the upper sill. This gate is designed to operate in an emergency against a hydraulic head of more than a million pounds pressure.

The gates of the two locks in the American section are of the miter type, the lower gate measuring 46 by 84 feet and weighing 280 tons. Tainter-type valves control the interchange of water in these locks, and the introduction of water to raise a vessel is accomplished with so little turbulence that a canoe passing through a lock with two vessels had no trouble whatever.

The equipment for moving ships through the locks is believed to be the most efficient in the world. Since heavy lines must be used to moor ships during lockage, line haulers resembling the standard industrial car hauler operate on top of the lock walls. All locks have stand-by power plants. The movement

of ships, in and out of the locks, is controlled by lights quite similar to those used by a highway traffic system.

On entering a lock, a vessel is required to make a landing and put ashore two men to assist in handling lines. Heating throughout the canal control buildings is electrical. On sector gates, heaters are installed at the sealing faces as well as in the hollow quoins of the miter gates. These units are energized at a temperature of 30 degrees Fahrenheit to prevent freezing. All locks are equipped with very effective surface lighting for lockage operations.

Lock-gate valves and emergency fenders can be operated either from the lock or remote-control points. Ordinarily, however, all operations are carried on from control rooms at the ends of the lock.

High Tide! Low Tide!

Recesses are provided at both ends of each lock for the placing of stop logs, the chief purpose of which is to permit unwatering for maintenance and inspection. Each stop log consists of two horizontal welded plate girders with a skin plate between the flanges on the water side. A horizontal seal of plaited nylon rope is provided between each log, and rubber seals are used at each end. The logs are placed by means of stiff-legged derricks.

Vertical deep-well pumps installed at the lower end of every lock are used to remove more than 20,000,000 gallons of water from the chamber. Each pump is capable of beginning its task by discharging 19,600 gallons per minute against a 10-foot head, and will also deliver 12,900 gallons per minute against a 50-foot total head as the end of the unwatering process approaches.

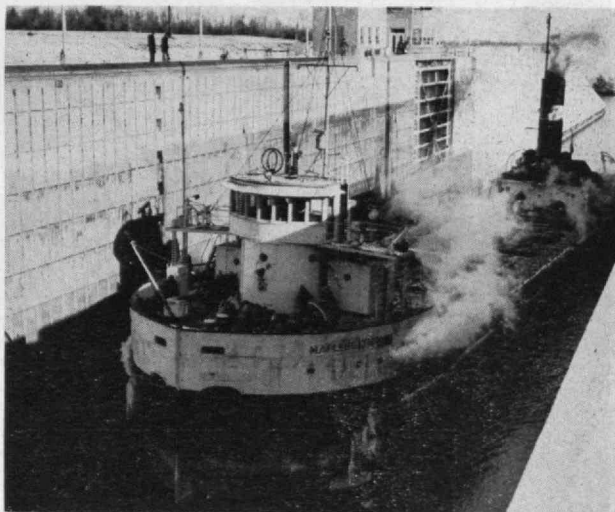
Canada's Iroquois Lock has a usable length of 768 feet, the length of the main lock chamber being 1,200 feet; and with its upper and lower approach walls the structure is 6,100 feet long. The lock walls are 47 feet high and 34 feet wide at the base. This big lock has two sets of sector gates at each end which can be opened for both filling and emptying, thus eliminating filling culverts and valves. This is possible because there is a difference of only six feet in the upper- and lower-water levels.

A sector gate consists of two vertical sectorial prisms, the radius of each being 48 feet with a 43-degree angle between its radial axis. Each gate is 43 feet high and the sector framing consists of seven horizontal structural steel frames and a skin plate on the outer faces of curved steel girders. The opening and closing time to fill or empty a lock, with a capacity of 20,000,000 gallons, is five minutes.

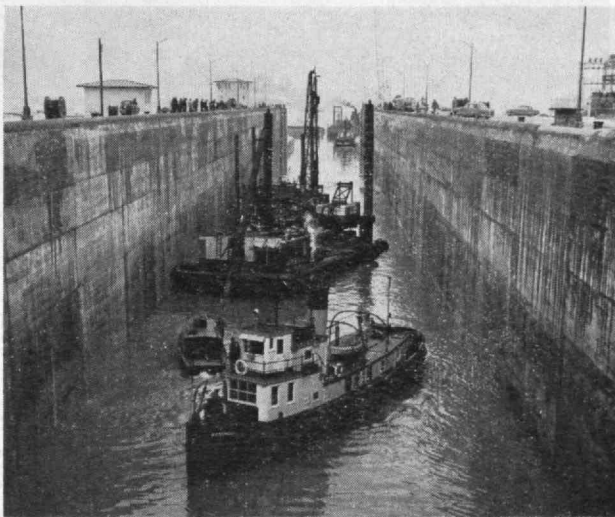
Nearly a Day Saved

Most of the Seaway locks can accommodate vessels in tandem, and the time required for transit is approximately 40 minutes. The total time for passage through the St. Lawrence section of the Seaway will be from 12 to 20 hours shorter than transit through the 21 locks of the old canal.

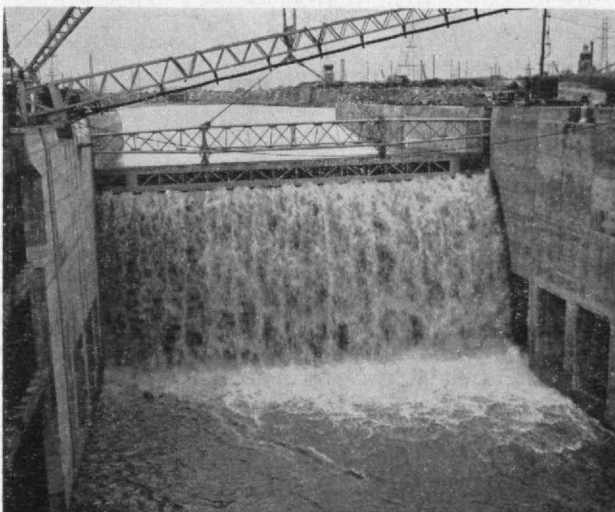
Above the Iroquois Lock and through the Thousand Islands section of the river, dredging and blasting have brought the channel to standard draft through to



Dwight D. Eisenhower Lock opened last summer. This Canadian canaler was last of 5,200 ships which went through old 14-foot canal between July 4 and December 8, 1958.



Lower Beauharnois Lock, 80 feet wide, 30 feet deep, with a usable length of 730 feet, is typical of Seaway locks. Combined lift of this one and its twin is 82 feet.



Here you see a stop log being lowered in keyways in canal walls in preparation for installing the two five-foot-thick leaves of a gate which will form an arch against the water load.



The Iroquois Lock and Dam, center of one of most beautiful sections of Seaway, control a power pool and navigation sys-

tem in Lake St. Lawrence, 30 miles long and up to four miles wide. This lock is largest of seven steps up to Lake Ontario.

Lake Ontario. From this point it is 159 miles clear sailing to the entrance of the Welland Canal and the climb past Niagara to Lake Erie.

The early traders who originally reached the Great Lakes, by way of the St. Lawrence, seemed for a time to be more concerned with opening up navigable waterways within the Great Lakes region than in the river. The North West Fur Company started construction in 1796 of a small lock to overcome the rapids of the St. Mary's River joining Lake Superior and Lake Huron at Sault Ste. Marie. This system made it possible for canoes to move from one lake to another.

The Welland Canal

Reports by English and French explorers and traders of the day, however, almost invariably considered a waterway around Niagara Falls an impossible undertaking, and it was not until November, 1824, that a group of Canadians organized a company to build a canal across the Niagara Peninsula. As the heaviest type of earth-moving equipment at that time was the horse-drawn scraper and black powder, the task was formidable. Nevertheless, the Welland Canal Company moved in, undismayed at the prospect of constructing 40 watery steps of wood, 110 feet long, 22 feet wide and eight feet deep, up the towering escarpment lying between Lake Ontario and Lake Erie. Remains of this monumental feat of early Canadian engineers are still in evidence.

Work on the present Welland Canal was started in

1913 and it was opened to navigation in 1933, after delays because of World War I. It emphasized the dramatic significance of deepwater navigation from the headwaters of the Great Lakes to the entrance of the St. Lawrence River. In the heart of the continent lay an industrial and agricultural empire and a water system of more than 100,000 square miles which, even at that time, carried the greatest fleet of ships in the world with a cargo tonnage greater by 18,000,000 tons than the combined commerce of the Suez and the Panama canals.

Whereas the first Welland Canal had 40 locks, the present waterway has only eight, three of which rise in flight formation like the Gatun locks at Panama. With locks 859 feet long between pintles, 80 feet wide and a depth of 30 feet over the sills, the Welland Canal's usable lock length is 820 feet. This accommodates most of the large Great Lakes bulk carriers. Its channel depth between locks until recently was 25 feet in some sections, and dredging in these parts has increased the depth now to 27 feet. The foresight of the Canadian government in building the canal has been shown by the minor nature of the alterations needed, nearly 30 years after its completion, to match the facilities of the new Seaway section in the St. Lawrence.

In discussions of the potentialities of the St. Lawrence Seaway so much emphasis has been placed on the passage of deep-draft ocean vessels into the Great Lakes that the equally important opportunity for the largest lake ships to move down to the sea has been overshadowed. Furthermore, so much attention has

been directed to increases in the general cargo trade with foreign countries that the importance of bulk cargoes has been discounted. There is every indication now that 85 per cent of the traffic will be bulk cargoes including iron ore and nonferrous metals, grain, coal and coke, petroleum and wood pulp.

Change in Shipping Pattern

The pattern of shipping on the old canal route brought the big grain ships to Port Colborne on Lake Erie, or to Prescott, Ontario, at the west end of the shallow draft canal where cargoes were transhipped to small canalers. It often required seven or eight of these vessels to handle the cargo of a big laker.

Although there will be an increase now in the number of foreign vessels moving into the Great Lakes with general cargoes and picking up return loads of grain, there will also be a dramatic increase in the movement of lake vessels to transshipment points at Montreal and on the river below. The grain trade of Canada and the United States is certain to undergo striking changes. Vessels up to 700 feet long are already under construction to meet the expected increase in bulk cargo transportation.

Montreal is spending more than \$2,000,000 for new facilities below the present harbor for efficient transshipment of cargoes from lakere to seagoing vessels. This thriving port now has a grain elevator capacity of nearly 22,000,000 bushels.

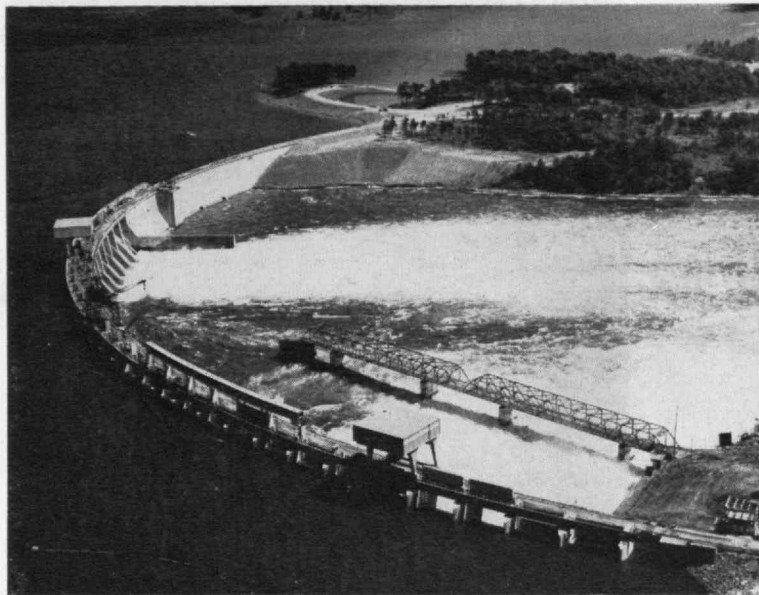
An American company is preparing to establish a transshipment grain elevator at Baie Comeau, hundreds of miles below Montreal and not far from the Gulf of St. Lawrence. It is quite possible that transshipment of grain could be made advantageously at the Seven Islands ore port on the north shore of the Gulf. Big lake ships could discharge grain for transshipment to ocean vessels and return loaded with ore. Another possibility is that lake vessels might continue as far as Sydney, Nova Scotia, Canada's great mining center, to discharge outbound bulk cargoes and load coal for return to the great lakes.

It would not be surprising to see some of the bulk traffic from the lakes move as far as Halifax for transshipment. Tramp steamers, bringing cargoes up the St. Lawrence as far as Montreal, may find it profitable to pick up return cargoes of grain there, or at such river transshipment ports as Sorel, Tres Rivières, or Quebec. The inland fleet of bulk carriers, American and Canadian, however, is likely to carry nearly all the domestic grain moving down the St. Lawrence.

Ore Shipments

The Seaway also will have an important effect on the movement of iron ore from Seven Islands. In 1957, more than 2,000,000 tons were carried up the river through Lake Ontario to Lake Erie. Most of this ore was brought to a transshipment point just below Montreal for transfer to canalers. An estimated 40,000,000 tons are expected to move through the Seaway this summer.

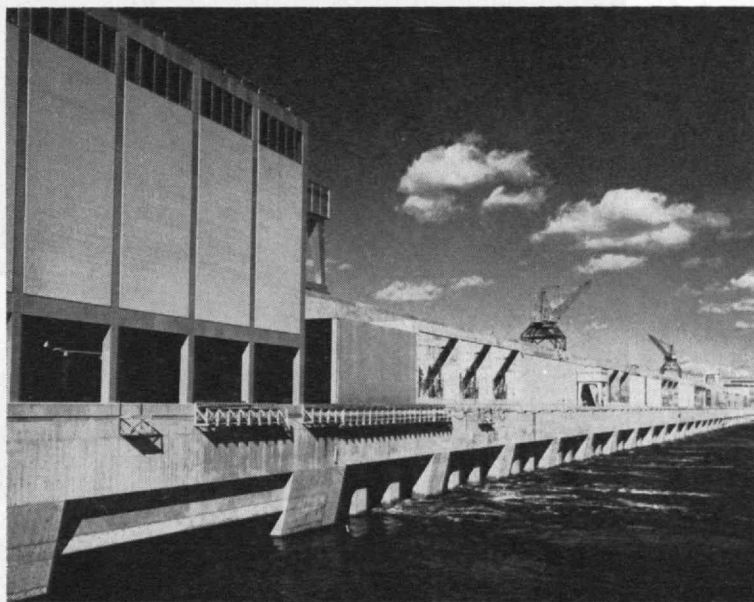
In anticipation of increasing trade with foreign countries, many of the Great Lakes ports are increasing harbor depths and building new port facilities. Fort William and Port Arthur, the huge grain ports of



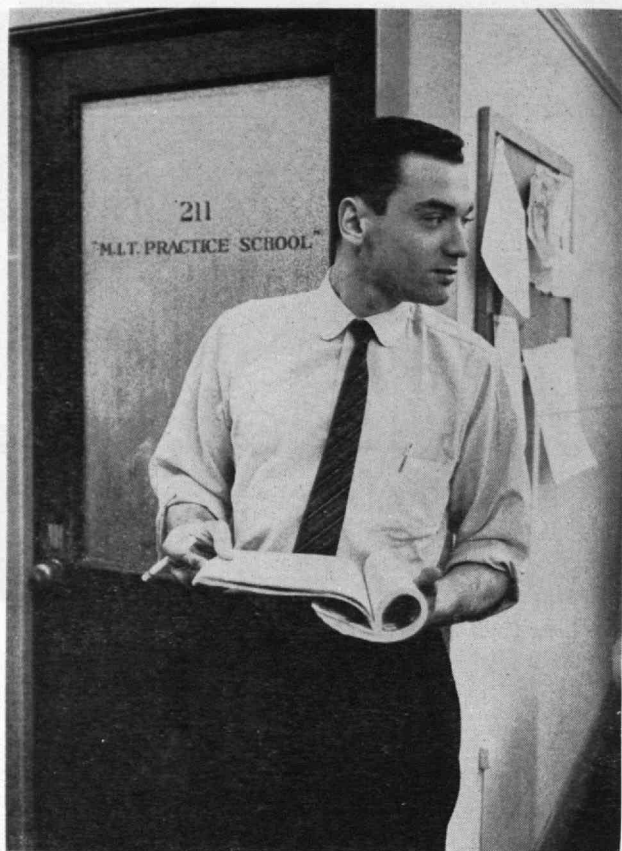
The Long Sault Dam controls water level at power dam. Big gantry crane (lower center) is used to adjust sluice gates. Beyond may be seen a mooring basin for pleasure craft, as well as a beautiful park which is used as a recreational area.

western Ontario, are constructing a co-ordinated port area. Major changes are being made at Sarnia, the big petro-chemical center on the St. Clair River, and improvements also are planned at Windsor, center of the Canadian automotive industry. Hamilton, on Lake Ontario, an important steel center, and Toronto also are developing new port facilities. Most of the big United States lake ports already served by the big ships are increasing the depth of their harbor channels and adding docking facilities in expectation of a flourishing general cargo trade.

In 1958 with traffic limited to the old 14-foot canal, traffic amounted to 13,000,000 tons, much of it outward bound. This year it is expected that at least
(Concluded on page 326)

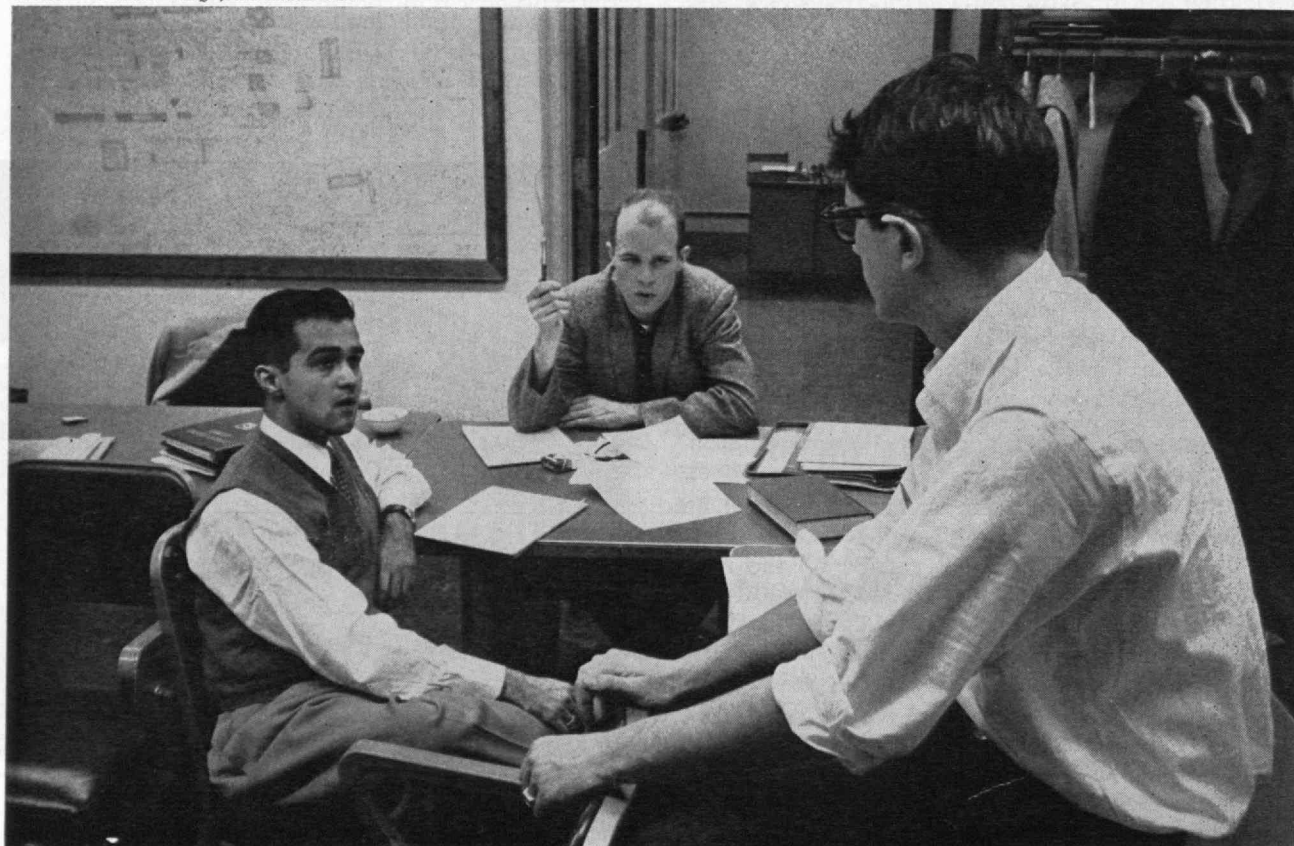


This is 3,300-foot international power dam's downstream face. Its 32 turbines generate 2,200,000 horsepower. Only Grand Coulee and Niagara exceed it.



Searching the literature is part of the job. Richard P. de Filippi (above) finds reports on new developments clarify a problem to which he was assigned at Bound Brook Station, New Jersey. Below you see graduate students Kishore V. Mariwala (left) and Robert S. Slott (right) listening to a problem proposed by Thomas F. Seamans. A resident Faculty member supervises the work at each plant.

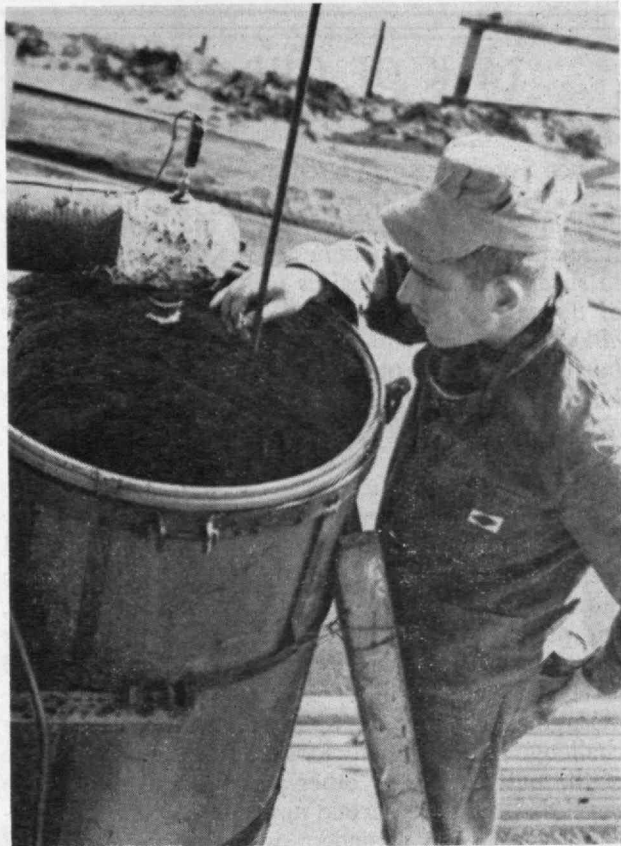
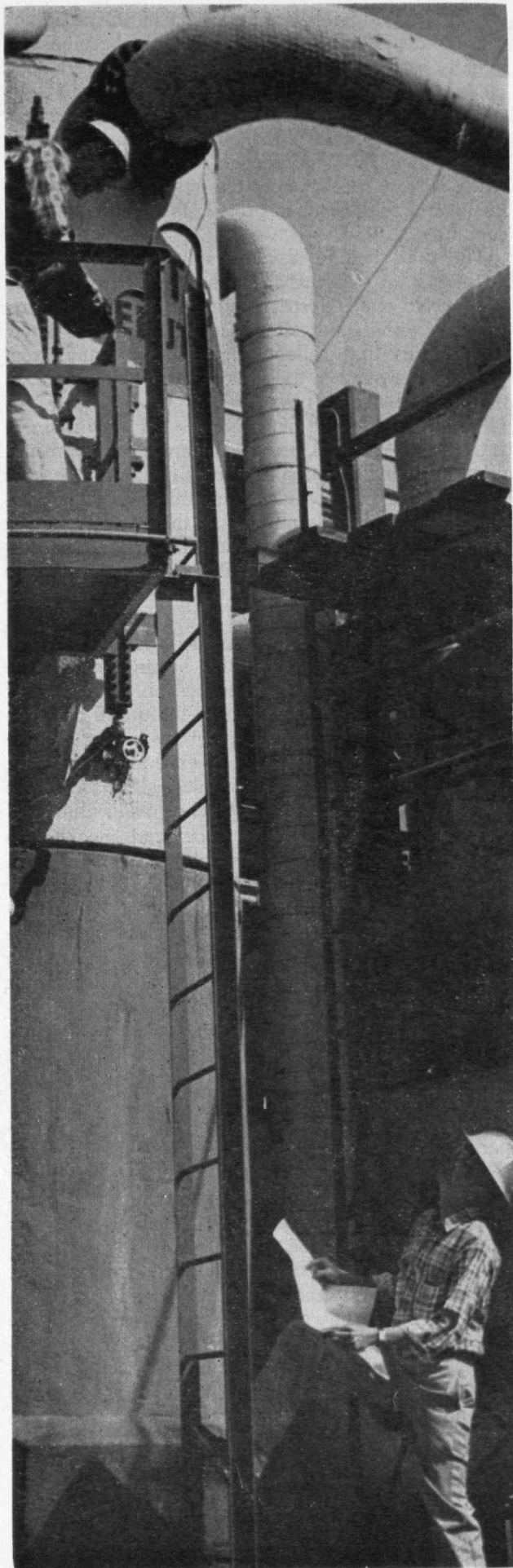
Photos — Werner Wolff from Black Star



M.I.T.'s Campus in New Jersey

REAL engineering problems are being solved, in the environment of complex industrial plants, to the satisfaction of both resident members of the Faculty and plant managers, at new M.I.T. Stations of Chemical Engineering Practice in New Jersey. These extensions of the campus embrace the Esso Standard Oil Company's Bayway Refinery in Linden and the American Cyanamid Company's organic chemicals plant in Bound Brook. Twenty students are spending nine weeks at each of these plants this term. Since 1917, the Institute's School of Chemical Engineering Practice has operated Field Stations. Their primary objective is to develop the student's ability to apply fundamentals by assigning him to a variety of challenging plant problems. Emphasis is placed upon the development of abilities to apply basic principles and good common sense to the solution of technical problems encountered in industry.

Professor Walter G. Whitman, '17, Head of the Department of Chemical Engineering, points out that the assignments given to students in these plants show them the importance of economic factors, human relations, and communication of one's ideas. "This type of program may be compared to the hospital internship of a young doctor," says Garrett Hill, manager of the Cyanamid plant. "Frequently," adds Ross Murrell, manager of the Esso Refinery, "they yield important technical contributions. The companies' use of these results greatly stimulates the confidence of the students in their engineering ability."



American Cyanamid Company

Above: Albert W. Karnath replaces a nozzle in a tower used for spray chilling a dye, in his course of studies at Bound Brook. At left: Mr. de Filippi is upstairs and B. C. Eusebio downstairs during an experiment with Bayway Powerformer equipment. Below: Leo F. Kelley listens to an expert explain problems of operating Powerformer at Esso Bayway Refinery.

Photos at left and below — Wm. R. Frutchey



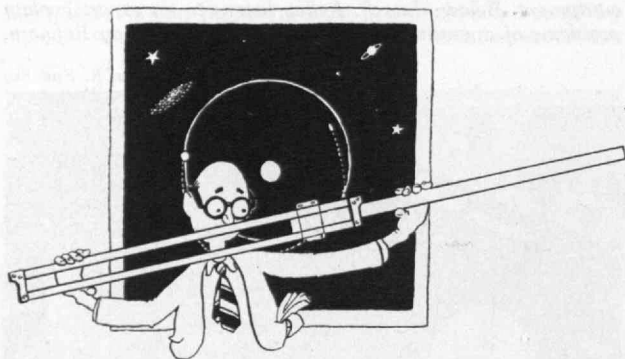
TALK OF OUR TIMES

Space Swallows the Shallow Salesman

Charles S. Draper, '26, Head of the Department of Aeronautics and Astronautics at M.I.T., is well qualified to speak of nontechnical as well as technical aspects of Space Age engineering. Why must many of the ablest engineers now do work that formerly was done by the sales department? Why must inventions now be made almost on schedule? In a recent talk to the Engineering Societies of New England, Dr. Draper explained:

■ The future will surely bring a long line of truly astronautical vehicles that will carry instruments and men well away from the earth, its atmosphere, and its gravitational field. Trips to the moon, Mars, Venus, and perhaps to other planets, may never show rewards great enough to become commonplace, but they will surely become possible.

Engineering for the Space Age must accept the challenge of doing many jobs that are similar to those of the past and many other jobs that are new in the sense that they are beyond anything in human experience. Practicing engineers who become involved, either from choice or necessity, in Space Age work nearly always need to enlarge their horizons and to deepen their knowledge in certain areas.



The Space Age has not only added greatly to the range of scientific knowledge required for mastery of new technical problems but also has radically altered the nontechnical aspects of the environment in which engineers work. In order to advance toward the more responsible and distinguished positions in his profession, an engineer must have a good understanding of this environment and demonstrate skill in dealing with its problems. Similar situations have occurred many times in the past, but several features are present today that greatly alter the roles that must be played by engineers who aspire to become leaders in their profession.

The first and most important of these features is that our country is in a deadly serious space-technology competition with an able and determined competitor who has very great resources in brains, man power, and money. The reward for maintaining

a good position relative to Russia in this "trial by science" is peace, however uneasy it may become. The penalty for allowing our achievements to lag behind could very well be catastrophic defeat.

The second feature of the Space Age environment is that the magnitude of the job involved in developing an operational weapon system, such as the Air Force Atlas, is so great that only the government has command of enough funds to provide the needed financial support.

The third feature also exists because of the size of the task of realizing any Space Age transportation system. No one industrial or governmental organization has within itself all of the capabilities required. This means that collaboration among many great organizations, that in the past have usually been competitors, is necessary now.

The fourth feature of the Space Age environment is that, to be effective, new and complex developments, often involving research and invention, must be kept on co-ordinated schedules that are very tight compared to the periods allotted in the past for similar projects. These stringent schedules place heavy burdens of responsibility on scientists and engineers who must make rapid decisions on the basis of information that is often very scanty.

Because complete vehicles are so expensive and difficult to manufacture, the testing of any considerable number of units is out of the question. This state of affairs places a great premium on the use of data collecting and processing equipment by highly capable engineers. The interpretation of experimental results, when they are available and verified, also has become one of the most important aspects of engineering.

Space Age developments, moreover, involve the manufacture of relatively few highly complex items rather than tens of thousands of such comparatively simple devices as the aircraft of the past. This introduces severe problems of finding work for considerable numbers of people. Companies that have done well in the aircraft field find themselves compelled to fight for places in Space Age developments in order to maintain their usual levels of employment. Not all companies can expect the same volume of business that they have received in the past. The financial power of our government, vast though it is, is still limited.

As a result of the severe competition among companies, some of which foresee problems of survival, a considerable proportion of our ablest engineers now are engaged in preparing and presenting space-technology proposals to government agencies. This work can no longer be done by sales departments; it requires the best efforts of top-level engineering people.

These efforts are required almost continuously because the Space Age game of move and countermove with Russia keeps technical requirements from reaching any state of reasonable stability. The changes involved are so great and occur so rapidly that a system is usually obsolete before it comes anywhere near the operational stage. Superb judgment, extreme effort, and good fortune are required on the part of an engineering department that keeps its company in a healthy condition when support depends on Space Age projects. The forced-draft pace that results very

(Continued on page 306)

BUSINESS IN MOTION

To our Colleagues in American Business . . .

Recently, a manufacturer of top-flight motor cars was having trouble in producing the escutcheon for the front bumper lamps used on his newest model.

First of all, the breakage of the part was excessively high. Secondly, the escutcheon which is drawn at an angle, and contains a concave surface on the inside presented a problem in that, after buffing, polishing and flash plating, the finish produced did not exactly match the chrome-plated bumper.

Having worked with this manufacturer in helping him successfully solve other metal-working problems, Revere's Technical Advisory Service was called on for consultation.

The possibility of using Revere 70-30 Brass Strip was discussed and after a cost analysis, showed its complete feasibility. Samples were made up for testing on production-line stamping presses. A trial run was made and much to the encouragement of all concerned, there was not one "breaker" in the lot. Switching to this more ductile metal not only resulted in less wear on tools, but it was found that little adjustment

of the presses was necessary from that of the setting used on the previous material. Breakage was reduced to less than 1%.

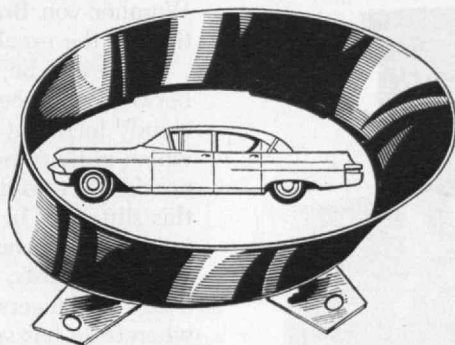
Also, after the escutcheons were polished and plated and recessed in the bumpers, the finish was found to be an excellent match. Here, again, by "fitting the metal to the job" Revere's Technical Advisory Serv-

ice was able to reduce manufacturing costs while improving the quality of the product.

It is entirely possible that by having Revere's Technical Advisory Service work with your engineers, designers, production men, purchasing agents . . . individually or collectively . . .

they can help you, too, realize substantial savings such as these.

And, because practically every industry you can name is able to cite similar instances, we suggest that no matter what your suppliers ship you, it would be a good idea to take them into your confidence and see if you cannot make a better product at lower cost by specifying exactly the right materials.



REVERE COPPER AND BRASS INCORPORATED

Founded by Paul Revere in 1801

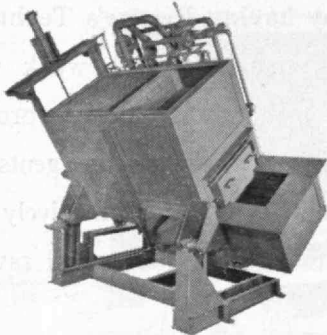
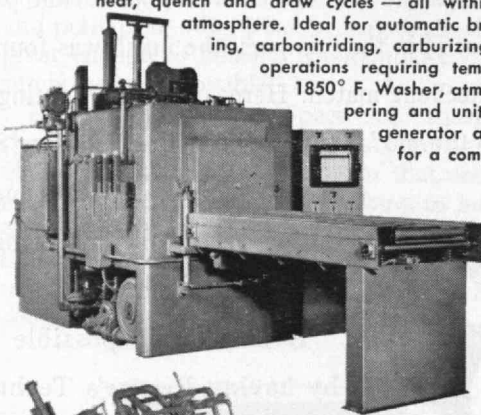
Executive Offices: 230 Park Avenue, New York 17, N. Y.

HEVI-DUTY

IN STEP with tomorrow's stepped-up DEMANDS

INDUSTRIAL FURNACES

Clean-line Automatic Heat Treating Unit handles heat, quench and draw cycles — all within protective atmosphere. Ideal for automatic bright hardening, carbonitriding, carburizing and other operations requiring temperatures to 1850° F. Washer, atmosphere tempering and unit atmosphere generator are available for a complete system.



Fuel-Fired Melting Furnaces — rigid or tilting types, manual or power-operated. Included are crucible furnaces and dry hearth furnaces for melting aluminum and other soft metals.

Vertical Retort Furnaces — Removable, sealed retorts make it possible to slow-cool a charge within protective atmosphere while a second retort load is being heated. Widely used for carburizing, nitriding and many other heat-treating processes.



HEVI-DUTY ELECTRIC COMPANY

MILWAUKEE 1, WISCONSIN

- Industrial Furnaces, electric and fuel
- Dry Type Transformers
- Constant Current Regulators

TALK OF OUR TIMES

(Continued from page 304)

often requires that inventions be made almost on schedule.

Engineers, in general, must accept responsibilities that are far wider in scope than those that they have shouldered in the past.

"Know What" Must Be Added to "Know How"

John B. Wilbur, '26, Head of the Department of Civil and Sanitary Engineering at M.I.T., called attention to a difference between science and engineering when he spoke at the 25th anniversary celebration of the College of Engineering at Wayne State University. Why are engineers so often called scientists? Is art being crowded out by science? Professor Wilbur said in part:

■ We need to ask ourselves once again just what engineering is, and particularly how it differs from science. Somehow, people have become a little confused about this. Today, for example, the press hails Wernher von Braun as a top "missile scientist" rather than as the excellent engineer that he is.

There can be little doubt but that the border line between engineering and science has become a little cloudy in recent years. "Crash" research programs, in which military necessity frequently dictated that economics be tossed largely to the winds, contributed to this situation. In fact, there seems to have developed, in certain quarters, a feeling that scientists, and especially physicists, have now proven themselves to be better engineers than are engineers, themselves: wherefrom has sprung the gospel that it is better that engineers aspire to be pseudo scientists than it is that they strive to be first-rate engineers?

Now we certainly need scientists and engineering scientists, and we need them badly. We need more research on missiles, and more on nuclear energy, and we need more study into the whole gamut of things that will underlie the conquest of space. The point, however, that I wish to stress is that while we need scientists and engineering scientists, we have just as great a need for engineers; and we also need engineering humanists — and, indeed, just plain humanists. The

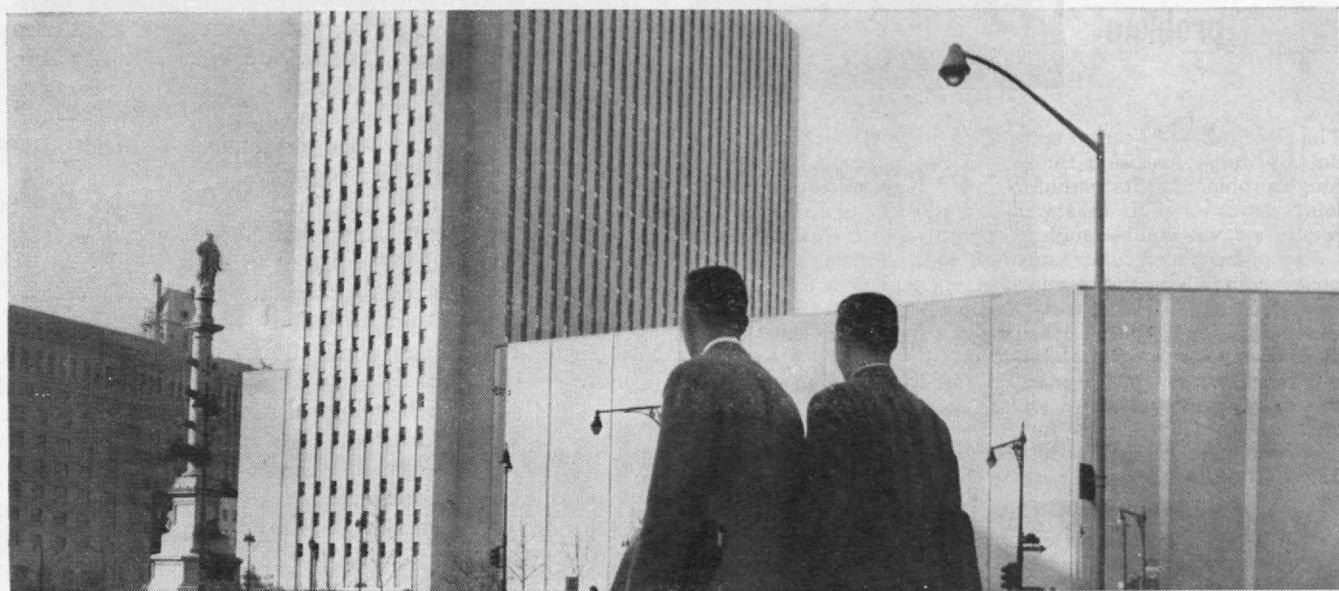
(Continued on page 308)

Long established New England manufacturer
of insulated wire and cable
has opening for

Electrical and/or Mechanical Engineer
(Preferably under 35 years of age)

Work is interesting and diversified. Prior experience will be recognized. All replies will be held confidential. Write Box C, The Technology Review, Massachusetts Institute of Technology, Cambridge 39, Massachusetts.

New "post-grad" program helps engineers move ahead at Western Electric



Careers get off to a fast start—and keep on growing—at Western Electric.

One big help is our new Graduate Engineering Training Program. This unique full-time, off-the-job study program starts soon after you join Western Electric... continues throughout your career. Students are offered courses in various fields including semiconductors, computers, feedback control systems, and problem solving techniques. What's more, they study methods for improving skills in communicating technical information and the art of getting ideas across.

You'll find the work at Western Electric stimulating, too. As manufacturing and supply unit of the Bell System, we pioneered in the production of the transistor, repeated submarine cable, and the provision of microwave telephone and television facilities spanning the country. Engineering skills can't help developing—careers can't help prospering—in the lively, exciting technical climate at Western Electric.

Western Electric technical fields include mechanical, electrical, chemical, civil and industrial engineering, plus the physical sciences. For more information pick up a copy of "Consider a Career at Western Electric" from your Placement Officer. Or write College Relations, Room 200C, Western Electric Company, 195 Broadway, New York 7, N. Y. And sign up for a Western Electric interview when the Bell System Interviewing Team visits your campus.

Western Electric



MANUFACTURING AND SUPPLY UNIT OF THE BELL SYSTEM

Western Electric Graduate Engineering Training Centers located at Chicago, Winston-Salem, N. C., and New York. Principal manufacturing locations at Chicago, Ill.; Kearny, N. J.; Baltimore, Md.; Indianapolis, Ind.; Allentown and Laureldale, Pa.; Burlington, Greensboro and Winston-Salem, N. C.; Buffalo, N. Y.; North Andover, Mass.; Lincoln and Omaha, Neb.; Kansas City, Mo.; Columbus, Ohio; Oklahoma City, Okla.; Teletype Corporation, Chicago, Ill. and Little Rock, Ark. Also Western Electric Distribution Centers in 32 cities and installation headquarters in 16 cities. General headquarters: 195 Broadway, New York 7, New York.

MANHATTAN'S COLISEUM TOWER building houses Western Electric's New York training center. Here, as in Chicago and Winston-Salem, N.C., Western Electric engineers participate in a training program that closely resembles a university graduate school.

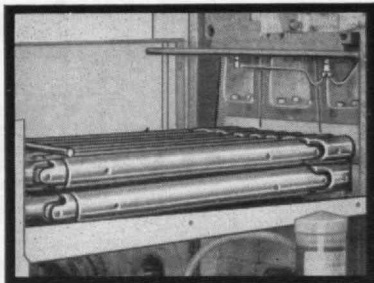


CLASSROOM SESSION at one of the centers takes up the first part of the three-phase program, Introduction to Western Electric Engineering. During this initial nine-week training period, new engineers are provided with a better understanding of Western Electric engineering methods and technical practices.



TECHNICAL TALK often continues after class. The free and easy informality of the new Western Electric training program offers plenty of opportunity for the stimulating exchange of ideas.

How Curtis solved a close center-to-center problem



The close center-to-center spacing of these drive spindles on a Sutton-Maust Precision Backed-up Roller Leveler created a tough problem for its manufacturer. He needed a universal joint strong enough to stand up under heavy rolling mill conditions, yet small enough to operate at such close quarters.

The answer was a Curtis universal joint! The maximum load carrying capacity and minimum torsional deflection of the Curtis joint was found to be completely satisfactory. And Curtis' famous Telltale Lock Ring construction permits quick disassembly for easier maintenance.

This is just one of the many power transmission problems solved by Curtis universal joints — size for size the *strongest* universal joints designed for industry. Selected materials, precision engineering, and 40 years' experience manufacturing universal joints exclusively make them that way.



WRITE FOR THE NEW CURTIS CATALOG, JUST PUBLISHED

14 sizes always in stock 3/8" to 4" O.D.

Not sold through distributors. Write direct for free engineering data and price list.

TRADE
CURTIS
MARK
UNIVERSAL JOINT CO., INC.
8 Birnie Avenue, Springfield, Mass.
As near to you as your telephone

**NEW
VIBRATING
CAPACITOR**

A vibrating-reed type capacitance modulator for use in measuring currents as low as 10 — 16 amperes.

Long term stability for process control. Drift ± 0.2 millivolts per day, non-cum.

Write for Catalog 523.

**STEVENS
INCORPORATED
ARNOLD**

7 ELKINS STREET
SOUTH BOSTON 27, MASS.

12-1/4

TALK OF OUR TIMES

(Continued from page 306)

conquest of outer space may be the most sensational prospect of the moment, but the fact remains that most of tomorrow's engineering will still be done right here on earth. And being largely earthbound, it is a safe bet that most of our engineering tomorrow, even as today, will continue to revolve around people — and when I say people, I mean earthlings — and not little green people with great big ears.

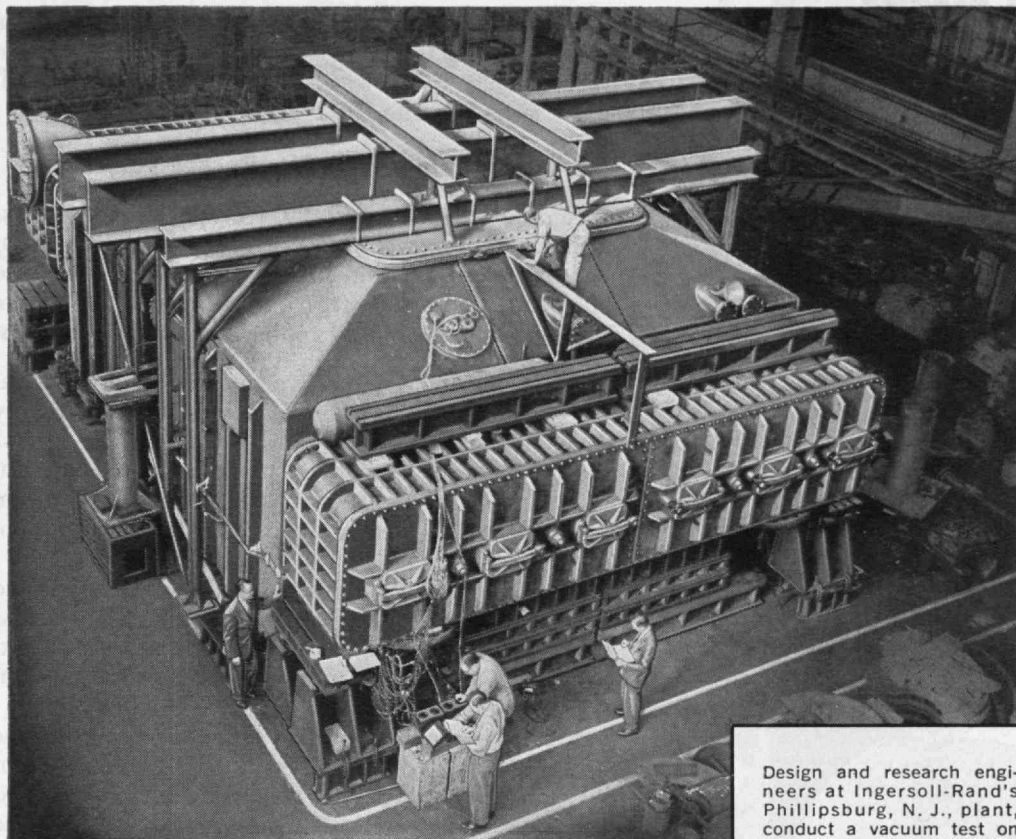
Let us not forget that there are two related, yet somehow divergent aspects of technology: the first, which is dramatically apparent to everyone, is today's rapid pace of scientific and technological advance; the second, which if more subtle is nonetheless vital, is the extent to which civilization is able or, perhaps more correctly, unable, to keep pace with the impact of scientific and technological development. The gap between these two aspects is appreciable; the lag in the ability of society to assimilate technological advance into its culture appears to constitute one of the major problems of our times and of the foreseeable future.

This Twentieth Century is a time when it will be determined whether the products of technology are to be meaningful used or frightfully abused. Man-made perils have become ascendant over the perils of nature; and man seems an unreliable custodian of the power to destroy. Technology, in crossing the boundary of insured control, has swept us into an era of new dimensions. In a world polarized around science, we, as educators, will be derelict to our duty if we are content with the mere dispensing of knowledge without simultaneously doing our utmost to nurture the wisdom to contain it.

It seems appropriate, therefore, to suggest that while technical "know-how" is indispensable to engineering, human "know-what" may well be its more challenging and elusive aspect. One has only to think in terms of some of the great areas of civil engineering — such as transportation, water resources, housing, and public health — to appreciate the probable validity of this viewpoint. I take the stand that engineering, in its broadest sense, revolves around an understanding of man's condition, and an aim to better it; and that the significance of technological advance arises from the fact that it provides a means which — if properly used — can help to make this betterment possible.

The engineer must, of a certainty, have a firm grounding in science; but in professional practice, such knowledge is but a springboard for most of the situations he will encounter. He must operate in areas that are in part above and beyond the well-documented but relatively limited areas of systematized knowledge. Perhaps the principal function of the truly professional engineer is to harmonize and relate the conflicting forces and tendencies that — unlike the situations encountered in pure science — are bound to be present when one attempts to apply science to the welfare of society. Such a process of harmonizing and relating is not a science, but is an art in the highest sense; and if

(Continued on page 310)

with **INGERSOLL-RAND**

Here's What Condenser Engineering at Ingersoll-Rand can mean to you...

Steam condensation plays a vital role in every steam power plant, or wherever condensing steam turbines are used throughout industry. Linking the turbine exhaust to the steam generator, the condenser completes the steam-water cycle—conserves boiler-feed water and lowers the turbine exhaust pressure to improve efficiency. Although basically simple in construction and operation, the steam condenser is one of the most highly engineered of all I-R products—every unit designed for its specific application. Hence condenser engineering at Ingersoll-Rand of-

fers exceptional opportunities for accomplishment.

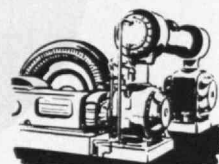
Ingersoll-Rand is also a recognized leader in the design and manufacture of the specialized industrial equipment shown at the right—all requiring a high order of engineering.

If you are looking for a leadership career with long range job security and excellent opportunities for advancement, you'll find it at Ingersoll-Rand. For further details, contact your placement office, or write to Ingersoll-Rand, 11 Broadway, New York 4.

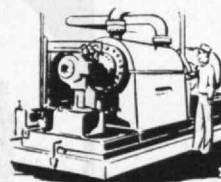
Design and research engineers at Ingersoll-Rand's Phillipsburg, N. J., plant, conduct a vacuum test on the shell of a large condenser, measuring millionth-of-an-inch stretches and deflections at 104 points, to check calculated stresses.



also means
LEADERSHIP
in



Compressors and Blowers



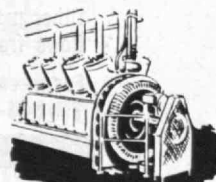
Centrifugal Pumps



Rock Drills



Air & Electric Tools



Diesel & Gas Engines

OPPORTUNITIES FOR ENGINEERS

- Sales Engineering
- Design Engineering
- Production Engineering
- Business Engineering
- Research And Development

Ingersoll-Rand

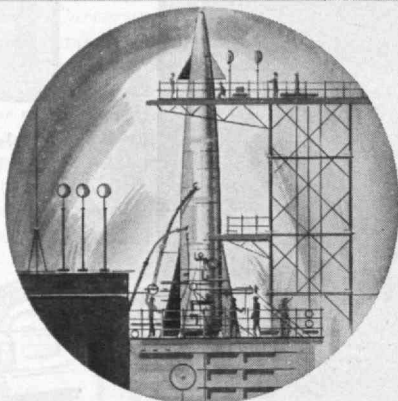
11 Broadway, New York 4, N. Y.

4-792

*Among the many graduates of Massachusetts Institute of Technology at Ingersoll-Rand are:
L. C. Hopton, 1926, First Vice-President and Secretary; P. J. Bentley, 1925, Vice-President.*

Atchley SERVOVALVES

**FIRST IN
RELIABILITY**



MODEL 415

The Model 415 flow rate is 10 GPM for 1000 psi drop across the valve. Because of unique jet construction, particles as large as 200 microns can be passed through both the first and second stages without malfunctioning.

Other features include:

Single source of oil in first stage eliminates possibility of unbalance or "hardover" signals due to oil contamination.

Second stage precisely controlled by a push-pull, frictionless, force feedback servo.

Other models available in four sizes with flows from 1/2 to 50 GPM.

For more information, write for Data File TR-644-1.

Raymond Atchley, Inc.

2340 SAWTELLE BOULEVARD
LOS ANGELES 64, CALIFORNIA
TELEPHONE • GRANITE 9-8626

TALK OF OUR TIMES

(Continued from page 308)

this art is crowded out by science to the point where we are merely training scientific technicians, then the very essence of professionalism in engineering will likewise be lost into the bargain.

Should You Help Boys Fire Rockets?

George P. Sutton, Hunsaker Professor of Aeronautical Engineering at M.I.T., described the dangers of basement rocketeering in an address last fall at the American Rocket Society's annual meeting. Here are excerpts from his remarks about playing with rockets:

■ There are today some two to three thousand local clubs or organized groups of boys who are virtually concerned with rockets. What should we tell them? Should we encourage them to build and fire actual rockets with propellants which are hotter than the melting point of steel and with fuels which can detonate and explode?

I, for one, want to discourage our young people from experimenting with dangerous chemicals, unless the proper safety measures, legal steps, training, experimental techniques, precautions, and qualified supervision can be used.

I know, personally, of nine experienced men in the rocket business who have been killed in explosions or fires of rocket propellants. They were not careless, and they knew all the tricks and safety precautions of the trade. Rocket fuels can be potentially several times more energetic than TNT or some of today's best gunpowders. A very small change in composition or formulation can turn a smoothly burning propellant into a vicious explosive.

While it is pretty well accepted that rockets sometimes blow up during ignition or the initial launching operation, it is not too well known that the actual loading of the rockets with propellants is perhaps the most dangerous operation of all. This is particularly true with solid-propellant rockets, some mono-propellants, and all types of igniters. During the launching you expect a mishap, and you generally take suitable precautions, but in the loading you have to have your hand right where you have the potential explosion.

A few of the amateur rocket organizations, particularly those associated with technical universities, have

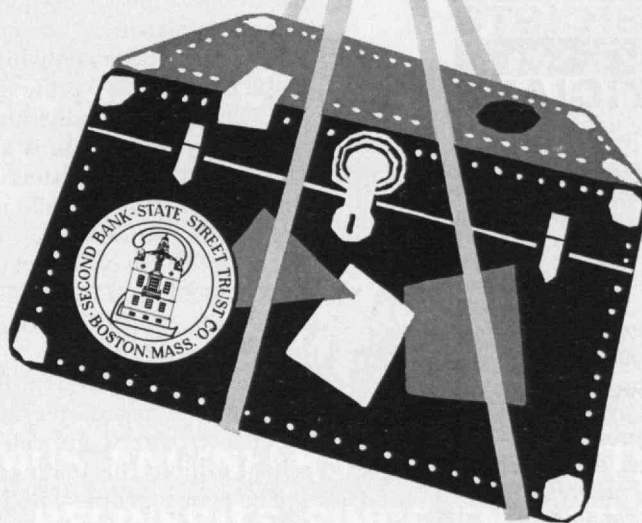
(Concluded on page 312)

William H. Coburn & Co.

INVESTMENT COUNSEL

68 Devonshire Street

Boston



TRAVEL SERVICES FOR YOU AND YOUR INVESTMENTS

If you are planning a trip or an extended vacation, there are many ways we can serve you.

We can provide letters of credit and travelers cheques.

We can furnish letters of introduction to our correspondent banks in the places you plan to visit, and information about exchange rates in countries overseas.

We can protect your valuables and important papers in our safety deposit vaults.

We can provide *take-care-of* services for your investments. Our Booklet "Agency Service — Experienced Management for Your Investments" has helped many people in their consideration of this important matter. If you are interested, we will be glad to send you a copy of "Agency Service" — no obligation, of course.

Why not take advantage of our varied travel services? We would welcome the opportunity.

*Whatever your banking or trust needs,
you're welcome at*
SECOND BANK-STATE STREET
Trust Company



HEAD OFFICE:
111 FRANKLIN STREET
Richmond 2-4500
Boston, Massachusetts

Member Federal Reserve System • Member Federal Deposit Insurance Corporation



ENGINEERS

PHYSICISTS

MATHEMATICIANS

Douglas diversification affords broadened opportunities, combined with stability and security.

Engineering at Douglas is divided into three basic areas ... missile and space systems, transport aircraft and combat aircraft. In these military and commercial categories, each advancing beyond present frontiers of achievement, engineers and scientists can progress to the limit of their capabilities.

In addition, supervisory and executive openings are filled from within the company. Many of the top executive officers at Douglas are engineers who have moved right up to assume wide responsibility.

We are interested in engineers with backgrounds in other fields as well as avionics, aircraft and missiles.

For further information write to Mr. C. C. LaVene, Douglas Aircraft Company, Inc., Santa Monica, California. Section N.



the most respected name in aircraft,
missile and space technology

TALK OF OUR TIMES

(Concluded from page 310)

constructed good facilities, instituted relatively good operating and safety procedures, and are working with local or state officials. They appear to have a good appreciation of the hazards and a noteworthy safety record. It can be done properly.

But what will you learn if you do fire or launch a rocket? It is usually a very short test, it lasts only a few seconds, and it is rather hard to see and catch with a camera. Are the many months of preparation worth the effort for that short few seconds of thrill?

There are many projects which are educational and beneficial, yet not hazardous. I have steadily encouraged my young friends to do these things.

To study and to learn new facts in science is one of the best ways to turn the interest from the dangerous, hazardous experimentation to a useful channel. To study mathematics, chemistry, meteorology, or any other facet of science which is connected with space flight is indeed a worthy and rewarding undertaking. This can be done individually or in groups.

A second suggestion is actually to build something. One group of youngsters studied and built a four-stage moon rocket missile model in which the proportions of the various stages and components were truly to scale. The wooden model was 10 feet high and was entered in a science competition. Other groups have built missile components in simplified form and made them work.

One can take these projects and studies and put them into forms or reports, slides, records, pictures, albums or posters, and enter them in fairs, expositions, school exhibits, or youth contests.

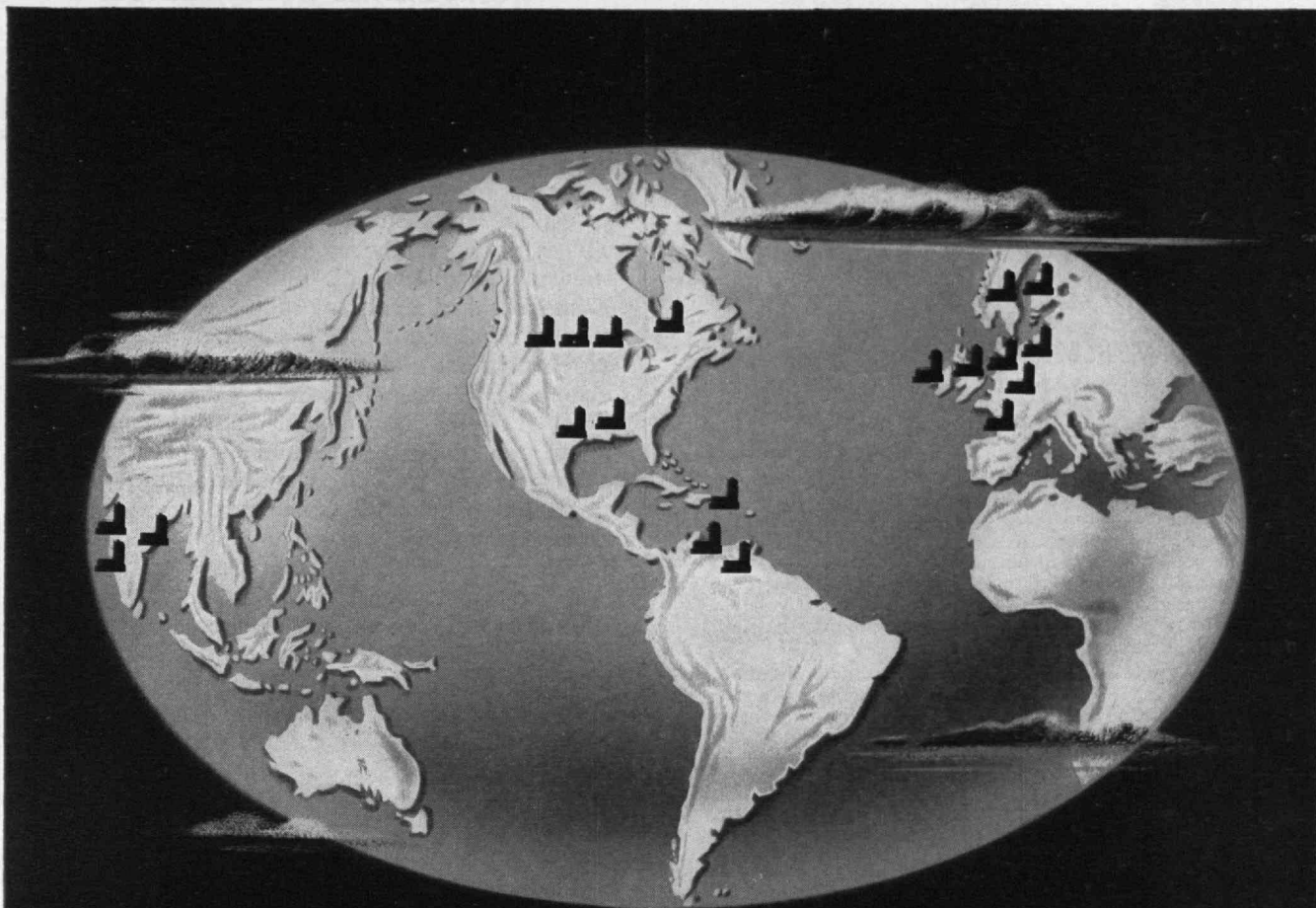
The young people who have a flair and a knack for technical studies ought to be helped and oriented toward scientific studies rather than be permitted to undertake dangerous and unnecessarily risky projects. This country can use all the top-notch scientific and technical talent that it can produce, and we do not need basement rocketeers or thrill-seeking rocket amateurs.

Choral Society Recording Now Available

A recording of the M.I.T. Choral Society's performance of Haydn's Theresa Mass in Munich, Germany, last summer is available now. The occasion was the celebration of Munich's 800th anniversary, and the concert was given in the recently rebuilt Herkules Saal of the Munich "Residenz."

Klaus Liepmann, Professor of Music at M.I.T., conducted, and the soloists were: Catherine Rowe, soprano; Margaret Tobias, alto; Donald Sullivan, tenor; and Paul Matthen, bass. The orchestra was the Graunke Symphony Orchestra. The issuance of this recording is particularly appropriate this year because this is the 150th anniversary of Haydn's death.

The 33 1/3-rpm, long-playing recording may be purchased for \$3.95, plus 20 cents for mailing, from the Office of the Director of Music, Room 14N-236, M.I.T., Cambridge 39, Mass.



LUMMUS ENGINEERS AND CONSTRUCTS 20 COMPLETE REFINERIES SINCE END OF WORLD WAR II

World-wide Lummus Organization also completed hundreds of other units in same period . . . From Cardon, Venezuela, to Bombay, India—from Corpus Christi, Texas, to Turku, Finland—this string of modern “grass-roots” refineries testifies to the engineering skill of the Lummus staff. That staff includes over 3,000 permanent employees, located in seven branch offices and subsidiaries throughout the world.

When you plan a new facility—oil refinery, chemical or petrochemical plant—Lummus can put 50 years of experience on more than 700 process-industry plants throughout the world to work for you.



Visit the Lummus Exhibit—Fifth World Petroleum Congress Exposition, the New York Coliseum, June 1-5, 1959

1. Refinery for Compañía Shell de Venezuela at Cardon, Venezuela
2. Refinery for Koppartrans Oljeaktiebolag at Gothenburg, Sweden
3. Refinery for Venezuela Gulf Refining Company at Puerto La Cruz, Venezuela
4. Refinery for Societe Generale des Huiles de Petrole at Dunkirk, France
5. “Portable” refinery for U. S. Navy Department
6. Lube oil refinery for Cit-Con Oil Corporation at Lake Charles, Louisiana
7. Refinery for International Refineries Inc. at Wrenshall, Minnesota
8. Refinery for Vacuum Oil Company Ltd. at Coryton, England
9. Refinery for Burmah-Shell Oil Company at Bombay, India
10. Refinery for Standard-Vacuum Oil Company at Bombay, India
11. Refinery for Standard Oil Company (Indiana) at Mandan, North Dakota
12. Refinery for Suntime Refining Company at Corpus Christi, Texas
13. Refinery for Commonwealth Refining Company at Ponce, Puerto Rico
14. Refinery for Esso Standard Oil Company at Antwerp, Belgium
15. Refinery for Caltex at Visakhapatnam, India
16. Refinery for Neste Oy at Turku, Finland
17. Refinery for Irish Refining Co., Ltd., Cork, Ireland
18. Refinery for Esso Standard Française, Bordeaux, France
19. Refinery for Purfina Mineraloelraffineria A.G., Duisburg, Germany
20. Refinery for B. P. Canada Limited, Ville d'Anjou, Montreal, P.Q., Canada

THE LUMMUS COMPANY, 385 MADISON AVENUE, NEW YORK 17, N.Y.

INSTRON

*offers
a new
dimension
in precision
materials
testing*




The "new dimension"? It's Instron's capacity to do more . . . and do it more accurately. Here are a few examples:

Instrons today are being used to test materials ranging from acetate to zirconium with electronic precision . . . to study single metal crystals to reveal new facts about the nature of twinning . . . to test high strength steel . . . to examine single fibers of cotton, wool, and human hair . . . to obtain accurate yield points in fine wire . . . to record toughness of paper, using special digitizer and print-out equipment . . . to study memory effects and physical properties of plastics . . . to examine special alloys at high temperatures.

Instron's "new dimension" — its capacity to do more things more accurately — enables R & D programs to move ahead faster, often into areas unapproachable with conventional testing equipment.

INSTRON[®]
ENGINEERING CORPORATION
2503 WASHINGTON STREET, CANTON, MASS.
HAROLD HINDMAN '39 II GEORGE S. BURR '41 VIII





ALUMINUM

PLASTIC

STEEL

WROUGHT-IRON

CEMENT-ASBESTOS

LIGHTWEIGHT

SPEED-LAY[®]

PIPE SYSTEM

FREE BROCHURE

ALBERT

PIPE

VALVES

FITTINGS

PIPE PILING

& ACCESSORIES

PIPE

FABRICATION

ALBERT

PIPE SUPPLY CO., INC.

101 VARICK AVENUE

BROOKLYN 37, N. Y.

tel: HYACINTH 7-4900

S.G. ALBERT '29
A.E. ALBERT '56

UNIVERSITIES IN TRANSITION

(Concluded from page 295)

ing; and there should be secondary growing facilities scattered through the laboratories of a Center for auxiliary purposes. Similarly, there will be laboratories for structure analysis, for spectroscopy, chemistry, magnetic resonance, and so on, as strongholds of specialists, and simultaneously x-ray and chemical facilities, spectrographs, resonance equipment, and so on, strewn as auxiliary tools throughout the federation. Each individual laboratory should own those facilities that are required full time in its program. The strength of the Center comes to the fore in the expert advice obtainable from specialized laboratories on the most effective use of such equipment. In this sense, theoretical physics and mathematics are also tools; we will expect to find theoretical physicists and mathematicians in many laboratories, strongly backed by a theoretical group of the Center.

Thus an association of laboratories emerges, different for each university depending on prehistory, existing facilities, and the driving research spirit of its faculty. Such a Center can adjust itself flexibly to the needs of the times: old laboratories will die out, new ones take their place; scientists and engineers may remain in one laboratory or enjoy varying alliances as their research projects demand; some members will become actively interested in all "Center" problems and act as catalysts correlating and consolidating information by intelligent discussion; and common facilities will be created as the need arises.

Initially, only a few laboratories in any one university may be really ready for this kind of adventure and willing to share the burden in time and effort required for its realization. Natural allies are, for instance, fundamental theoretical and experimental research projects concerned with the electric, magnetic, mechanical, and thermal properties of matter, with structure analysis, spectroscopy including magnetic resonance, structure chemistry, polymer science and crystal growth. As confederates from the molecular engineering side they might find projects concerned with the development of computers and transistors, energy converters and memory devices, high-temperature materials for space vehicles and new propellants for the atomic age. Obviously, many more subjects could be mentioned, and any "Center for Modern Materials Research" must remain in spirit an "open club" prepared to admit new members.

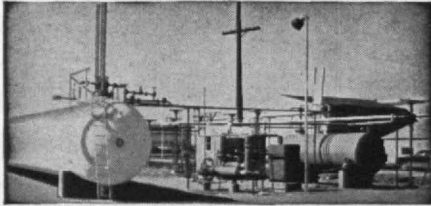
It must be understood that this "modern materials research" operating on the molecular plane does not look condescendingly down on older approaches. On the contrary, the classical knowledge about materials and materials testing remains indispensable for our industrial civilization and should be represented in the "Center" as a true partner. Only by knowing both aspects can we arrive at a full understanding and give to empirical data and test methods a deeper meaning.

Blood Donations Increase

Despite storms which made appointments difficult to keep, M.I.T. students contributed more blood in this year's drive than was given last year. The Technology Community Association conducted the blood drive.

315

GAS STANDBY



Packaged 12 mcfh plant designed and built by Draketown for...

- ★ Utility or Industrial standby
- ★ Peak shaving and augmentation
- ★ 100% Town or plant supply

A Packaged Draketown Propane Plant will help you reduce demand charges; provide a supply of gas during curtailment periods... at the turn of a valve... or supply that outlying section or plant 100% if desired.



PROANE PLANTS

"Good Gas Insurance"

If you have a gas problem, we can help you. We operate from coast to coast and overseas.

Phone or write today—no obligation.

DRAKE & TOWNSEND

INCORPORATED

Consulting • Design • Engineering • Construction

11 WEST 42ND STREET • NEW YORK 36, N. Y.

TREND OF AFFAIRS

(Continued from page 292)

■ Special awards and honors have been announced recently for the nine Alumni enumerated below:

To *Harry A. Wansker*, '17, citation for "outstanding service to the U. S. Army Chemical Corps," by the Department of the Army... to *Donald W. Kitchin*, '19, and *Orison S. Pratt*, '41, first prize in the science and electronics division for a paper entitled "Treeing in Polyethylene as a Prelude to Breakdown," by the American Institute of Electrical Engineers;

To *Walter J. Hamburger*, '21, the Harold DeWitt Smith Memorial Medal, by the American Society of Testing Materials... to *John W. Beretta*, '23, the Engineer of the Year award, by the Bexar Chapter, Texas Society of Professional Engineers... to *James C. Evans*, '25, a Career Service Award as one of the 10 top career men in the federal government for 1959, by the National Civil Service League;

To *Joseph F. Libsch*, '40, the Stoughton Award, by the Lehigh Valley Chapter, American Society for Metals... to *William C. Brown*, '41, the grade of Fellow, by the Institute of Radio Engineers... to *Thomas T. Jones*, '54, the Army Commendation Ribbon with Metal Pendant, by the United States Army.

(Continued on page 318)

THERMOCOUPLES

for every industry



DATA BOOK

New
32-page
file book

- ★ Handily lists all data (I.S.A.) and
- ★ Graphically shows easiest way to select precisely the best thermocouple and protective tube for each operation.
- ★ Lists all components, with prices and
- ★ Provides handy reference for stock record.

FREE
write for
your copy
Now...

STANDARD AND SPECIAL

For furnaces, ovens, kilns, moulding machines, pipelines, freezers, etc.

For use with all standard types of temperature indicators, controllers, recorders.

We make thermocouples from matched and checked wires to insure constant millivolt output for accurate readings. Complete selection.

WEST *Instrument*
CORPORATION

CHICAGO

SALES OFFICES IN PRINCIPAL CITIES



Bennett Cerf, President of Random House, Inc., world-famous publishers of fine books including The Modern Library and The American College Dictionary; Henry Moyer, Jr., of New England Life.

Bennett Cerf and Henry Moyer, Jr. collaborate on a Profit Sharing Plan for Random House

Meeting and working with interesting men like Bennett Cerf is one of the most satisfying things about his career with New England Life, according to Henry Moyer, Jr. (Dartmouth '51).

Recently, he presented to Mr. Cerf his proposal for a revised Profit Sharing Plan for the staff of Random House. They went over the details together and developed a program which will benefit employees in every salary bracket — providing more life insurance protection for less money than was previously possible.

Henry will, of course, work closely with company officials in servicing this plan through the years. And he'll continue the personal programming for a number of the executives at Random House. This one report of Henry's

activity is just a part of the outstanding job he's been doing for New England Life, ever since he joined us in 1952.

If a career of this sort appeals to you, investigate the opportunities with New England Life. You get a regular income from the start. You can work anywhere in the U. S. A. Your future is full of substantial rewards.

For more information, write to Vice President L. M. Huppeler, 501 Boylston Street, Boston 17, Massachusetts.

NEW ENGLAND
Mutual **LIFE** Insurance Company
 BOSTON, MASSACHUSETTS
 THE COMPANY THAT FOUNDED MUTUAL LIFE INSURANCE IN AMERICA — 1835

**New
Books
from the
Technology
Press**

**Noise
in Electron Devices**

*Edited by Louis D. Smullin
and Hermann A. Haus*

A discussion stressing the mathematical theory and basic physical phenomena of noise in electron devices. The book is based on a special summer session on noise in electron devices held at M.I.T. in 1955, and is a comparison of the various treatments of noise. Problems of noise due to thermionic emission, the general circuit aspect of noise in microwave tubes, and some of the detailed engineering solutions to the problems encountered in the design of low-noise traveling-wave tubes and space-charge control tubes are considered by specialists drawn from both industrial and academic fields.

\$12.00

**The Physical Chemistry
of Steelmaking**

Edited by John F. Elliott

A symposium based on the papers presented at the conference on the physical chemistry of iron and steelmaking, sponsored by the Metallurgy Department in 1956. Both the conference and the book were designed to present the latest research in this field in an effort to stimulate a greater understanding of the research data applicable to steel-making systems.

\$15.00

**Order
from the
Technology
Press,
Cambridge 39,
Mass.**



GEARS

**Made to Your
Specifications**

You and we can form a team—you to draw up the specifications; we to make the gears—that will be profitable to both of us. Gears of all types, all sizes, all materials. Design-engineering service available.

**Custom Gears
Exclusively**

**DIEFENDORF GEAR
CORPORATION**

Syracuse 1, N. Y.

**DIEFENDORF
GEARS**

TREND OF AFFAIRS

(Continued from page 316)

New Scientist for Advanced Projects

■ Next month, George P. Sutton, who is Jerome Clark Hunsaker Professor at Aeronautical Engineering at M.I.T., will become chief scientist of the Defense Department's Advanced Research Projects Agency. He will succeed Herbert F. York, who is to become the department's director of Defense Research and Engineering.

Professor Sutton is a former president of the American Rocket Society. He came to the Institute last fall from the Rocketdyne Division of North American Aviation, Inc.

The Hunsaker professorship which he has held this year was conceived by the late Major Lester D. Gardner, '98, founder of the Institute of the Aeronautical Sciences, and established in 1954. To emphasize the national character of this endowed chair, the late Glenn D. Martin contributed a special gift for presentation of an annual lecture named in honor of his mother, Minta Martin.

Professor Sutton delivered the fourth Minta Martin lecture at M.I.T. last month on "Rocket Propulsion Systems for Space Flight." The Institute of the Aeronautical Sciences and the California Institute of Technology have arranged for him to repeat this lecture in Los Angeles on May 12.

Penicillin Production Progress

■ Recent penicillin news has been confusing but good. First, reports of the work of a group of British chemists led some folk to think that they had synthesized penicillin. Then, the American Chemical Society announced that it was bestowing a \$1,000 award on John C. Sheehan, Professor of Organic Chemistry at M.I.T., for work that included the synthesis of penicillin. What were the facts?

Ever since penicillin's great value in medicine was discovered, it has been made from molds, in which it grows in a natural process of fermentation. The British chemists recently succeeded in stopping the fermentation when a basic ring structure had been formed and adding a side chain. By this process they isolated a compound known as 6-aminopenicillanic acid.

Dr. Sheehan had produced this compound, too, but had done it differently. He had reported preparation of this compound via a synthetic route and conversion of it into a variety of penicillins. His methods were chemical and did not involve the fermentation process.

New forms of penicillin and new processes for producing it are being sought for two reasons: New forms may be useful against bacteria that are now resistant to penicillin and diseases that cannot now be treated successfully with it, and new forms may be tolerated better by patients who are now allergic to penicillin.

"The British group, like our own team, are now engaged in a research program to discover which, if any, of the chemically modified penicillins will have

medical advantage," Dr. Sheehan said, when asked about the confusing newspaper items. "In other words, both groups are now trying to find what particular member of the penicillin family looks most promising and extensive tests will be required before any of the new drugs will be released for medical use. The British workers have described an interesting variant of the present commercial method of fermentation.

"Here in our M.I.T. laboratory we had previously reported the synthesis of a biologically active synthetic penicillin which differed from the natural penicillins only in the side chain, and two years ago, using this general method, Merck, Sharp and Dohme Research Laboratories in Rahway, N. J., prepared more than 10 synthetic penicillins which were all biologically active.

"The British development offers an alternative way to prepare some of these penicillins.

"There are now three approaches to the preparation of new penicillins. First, our totally synthetic route which is capable of greater variations and can even alter the penicillin ring structure as well as the side chain, but which appears to be the most expensive of the three routes. Our second approach is by removal of the side chain from a natural penicillin and replacement with a different side chain. The third method, reported by the British, is to interrupt the fermentation at the aminopenicillanic acid stage and add the side chain in a one-step chemical process. On the basis of the present information, it is not possible to decide which of the latter two approaches would be commercially advantageous for the production of a new penicillin."

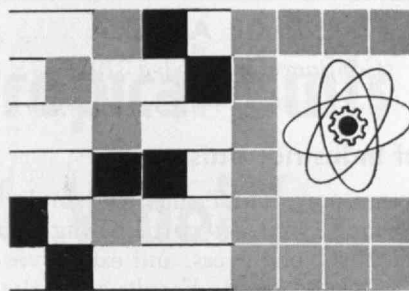
John Edmonston of the Merck, Sharp and Dohme Research Laboratories added to Dr. Sheehan's explanation of the situation: "Our investigation in this field continues and we have hopes that a practical product may be developed in the future. Several of the new penicillins are effective against certain strains of staphylococci resistant to Penicillin G. They proved active in animals. However, the effectiveness has not been on an order of magnitude to be practical for a product to date."

In addition to synthesizing penicillin, Dr. Sheehan has developed a selective method for synthesizing peptides, using carbodiimide as a key reagent. Peptides vary widely in nature. Some important hormones and antibiotics, for example, are peptides. Dr. Sheehan planned to report to fellow chemists on this work when he accepted the prize this month for "creative work in synthetic organic chemistry."

Lessons from Flying's History

■ Grover Loening, who was Orville Wright's first aeronautical engineer, will inaugurate the Lester D. Gardner Lectures in the history of aeronautics at M.I.T. on April 10. "From the earliest days of the first primitive flying machine, aircraft development has suffered because new ideas have gone unappreciated and important new developments have remained unused," Mr. Loening says, in speaking of his topic. "Lessons from mistakes in design can be as useful as those from successful experiments; both are vital today."

(Continued on page 320)



Put your imagination to work at \$13,000 per year-SENIOR MACHINE DESIGNERS

The expanding RCA Semiconductor Division offers an opportunity to join a stable, progressive organization engaged in commercial work.

An outstanding opportunity to conceive, design, and put into actual operation manufacturing equipment for this dynamic industry is available to experienced designers of proven ability.

Previous experience in designing automatic precision equipment for the assembly, fabrication, and processing of intricate parts will further qualify the applicant for a position with this organization.

A DEGREE IS DESIRABLE

- Financial Educational Assistance • Relocation Assistance Available
- Suburban Community

Send resume today to
Mr. R. W. Baumann



**RADIO CORPORATION
OF AMERICA**

Semiconductor and Materials Division,
Somerville, New Jersey

TREND OF AFFAIRS

(Continued from page 319)

10 Years of Industrial Liaison

■ For 10 years now, M.I.T. has had an Industrial Liaison Program. Companies participating in it regularly send scientists, engineers, and executives to the Institute to be briefed by the Faculty on such diverse subjects as x-ray and neutron diffraction techniques in metallurgy, research and development in decentralized companies, reinforced plastics, biophysics, and conversion of heat to electricity.

This organized program of communication with industry now includes 88 of America's leading industrial concerns, and has been used as a model for similar programs at other schools. Each participating company supports the Institute through large, unrestricted grants, which help pay current operating expenses.

"The problem of keeping pace with rapidly changing technology is one of the most persistent and challenging tasks facing industry today," says Vincent A. Fulmer, '53, Director of the liaison program. "At M.I.T. we take pride in having found a means by which a company can keep its ear to the ground and

at the same time benefit the Institute immensely by providing professional stimulation and badly needed financial support. This year, M.I.T. will realize \$1,250,000 from this collaborative arrangement, an amount roughly equivalent to the tuition payment of 15 per cent of the student body.

"One thing seems clear from 10 years of experience with this type of liaison: Its full potential for service to industry and to M.I.T. has not yet been realized."

WTBS Seeks Wider Horizons

■ Since 1946, M.I.T. undergraduates have had their own radio station, supplying music and news to the dormitories. About 100 students participate now in its management, maintenance, and programs. N. Addison Ball, '60, is the station's manager, and Linda H. Greiner, '60 is the assistant manager.

A first step toward making this station audible throughout Cambridge and Boston is being taken this spring. A corporation to be known as the WTBS Foundation is being organized to seek an FM channel for WTBS. Houlder Hudgins, Professor of Industrial Management, will be chairman of the new corporation's executive committee, and D. Reid Weedon, Jr., '41, will be its treasurer.

(Continued on page 322)



Whoever handles liquid . . .

Handles it better and safer



When he takes advantage of



SCULLY Signals, Gauges, Systems.

SCULLY SIGNAL COMPANY

174 Green Street, Melrose 76, Massachusetts

Flow Control

Electronics



"Precision-Gauged" HAIRSPRINGS

More than 25 years' experience making all types of hairsprings for critical instrument applications. High volume production with absolute uniformity.

PRECISION PRODUCTS COMPANY INC OF WALTHAM
WALTHAM 54 • • MASSACHUSETTS

**CAREER
WITH
A
FUTURE**

The Sun Life of Canada, one of the world's great life insurance companies, offers men of ambition and integrity an outstanding professional career in its expanding field forces. If you are interested in a career with unlimited opportunities, then Sun Life has the answer.

- **Expert Continuous Training**
- **Excellent Income Opportunity**
- **Generous Welfare Benefits**

For full information about a Sun Life sales career, write to W. G. ATTRIDGE, Director of Agencies, Sun Life of Canada, Montreal.

SUN LIFE ASSURANCE COMPANY OF CANADA

COAST TO COAST IN THE UNITED STATES

Choose One of Our Tropical Suits of 55% Dacron and 45% Wool for Comfortable Wear and a Well-Groomed Appearance

at
49.95

or
55.00

or
65.00

3-Month Payment Plan
No Carrying Charge
Patronage Refund Too
8% or 10%



The Dacron-Wool blend was designed for the man whose suits must always look tailor-fresh . . . stay unwrinkled and unruffled from breakfast to bedtime. These suits of ours stay fresh hour after hour and keep their press day after day . . . and most important, always retain that important new-fashion look.



JOIN - BUY - SAVE



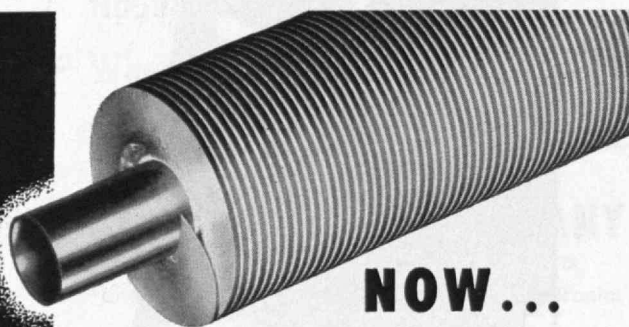
EXECUTIVE

knows that all will go well
at the plant because electrical
construction and maintenance
have been handled by

A. J. WOLFE COMPANY

2 Harris Avenue, Jamaica Plain,
(Boston) 30, Massachusetts

Call JAmaica 4-1222 . . . Our 35th Year



NOW...

Even More

Heat-Exchange Capacity

Even Less **Air Friction**

with **AEROFIN**
Smooth-Fin
Heating and Cooling Coils

Write for Bulletin S-55

AEROFIN CORPORATION
SYRACUSE N. Y.

TREND OF AFFAIRS

(Continued from page 320)

The High Cost of Breathing

■ The Alumni Council, at its February meeting in the M.I.T. Faculty Club, heard about two kinds of atmospheric changes: John T. Rule, '21, Dean of Students, contrasted the life of his classmates when they were undergraduates with that of the Institute's students today; and Rolf Eliassen, '32, Professor of Sanitary Engineering, described the causes, effects, and costs of controlling air pollution.

Dean Rule reported changes for the better. The atmosphere of undergraduate life has been improved by additions to the Institute's facilities. More students live in dormitories nowadays. Special events in the Kresge Auditorium, services in the M.I.T. Chapel, and intramural sports keep students on the campus more of the time, and their presence is a challenge to the Faculty and the Administration to create the most favorable environment possible. "We are developing a house master system," Dean Rule continued. "We want students to have a richer life on campus. We want them to feel that their imaginations are being stretched. We are putting into the dormitories an atmosphere of maturity and intellectual excitement."

Professor Eliassen reported changes for the worse. The 15,000 quarts of air per day that each of us requires is becoming more polluted, in more diverse ways, by the gases and liquid and solid particles that are discharged into the atmosphere by industrial plants, cities, homes, and cars. Contaminated air is injuring both people and property, despite the tens and hundreds of millions of dollars that have been spent to install and operate incinerators, scrubbers, precipitators, and other devices. Lung cancer is more frequent in cities than in rural areas. Corrosion, agricultural losses, and poor visibility at airports have also been traced to pollution in the air. More work must be done in several scientific disciplines to reduce it, and the cost will be high.

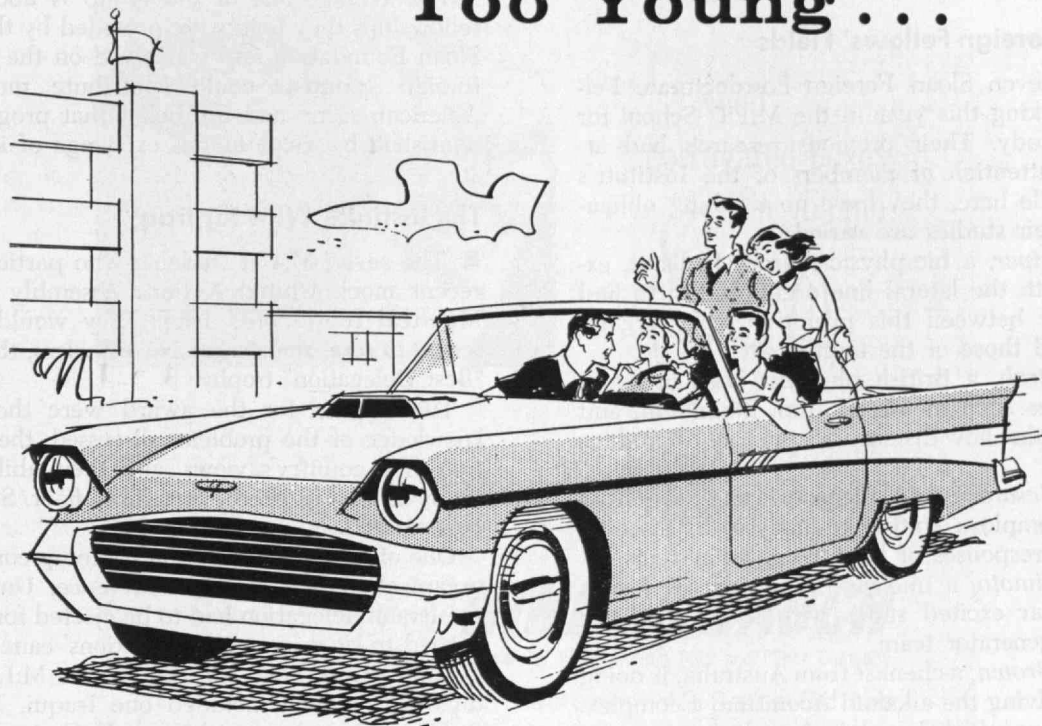
"We know the causes in many instances," Professor Eliassen concluded. "We know some of the consequences. Controls can be brought about, but can we afford them? Money, people, and the desire are needed to clean the air."

Alf K. Berle, '27, reported that 9,414 Alumni had contributed \$380,300 to the Alumni Fund on or before February 13 and that these figures were, respectively, 8.5 per cent and 35 per cent higher than last year's totals for the same date. He urged the 7 per cent of the Alumni Council's members who had not yet contributed to do so before the next meeting.

John A. Lunn, '17, reported on the work of the National Nominating Committee, of which he is chairman. John J. Wilson, '29, President of the Alumni Association, presided at the February meeting, and Donald P. Severance, '38, read the Secretary's report. It recorded two changes in class affiliation and 15 visits to local clubs and one regional conference.

(Concluded on page 324)

Too Much . . . Too Young . . .



Is it fair to load substantial property on young people too early in life?

Experience teaches quickly, but often without a second chance to profit from a mistake. Unrestricted control of substantial property early in life can upset the development of a rewarding career and lead to unfortunate results.

Four generations of New England families have used trusts with The New England Trust Company to introduce their children to the responsibilities of property management — gradually. They have planned so that early mistakes would not wipe out a complete inheritance. Our officers will be glad to explain the practical use of trusts and how they may be useful to your family.

Telephone or write for your copy of our new booklet, "Advantages from a Trust under Your Will".

The New England Trust Company

135 DEVONSHIRE STREET, BOSTON 7, MASS.

Telephone: HANcock 6-8005

Back Bay Branch: 99 Newbury Street

*Member of the
Federal Deposit
Insurance Corporation*



Incorporated 1869

TREND OF AFFAIRS

(Continued from page 322)

The Seven Foreign Fellows' Fields

■ The first seven Sloan Foreign Postdoctorate Fellows are working this year in the M.I.T. School for Advanced Study. Their previous research had attracted the attention of members of the Institute's Faculty. While here, they have no teaching obligations, and their studies are varied:

Jan W. Kuiper, a bio-physicist from Holland, experiments with the lateral line organ of fish to find the similarity between this primitive sense organ's responses and those of the human ear.

Alan N. Stroh, a British physicist born in South Africa, studies such metals as iron, aluminum, and zinc to determine how dislocations interact to produce cracks.

Mihajlo Mesarovic, an electrical engineer from Yugoslavia, employs statistical analysis to discover the dynamic responses of large complex systems.

Kenzo Sugimoto, a nuclear physicist from Japan, studies nuclear excited states with the Rockefeller electrostatic generator team.

R. Challis Brown, a chemist from Australia, is doing research involving the alkaloid Aconitine, a complex, poisonous drug which has defied analysis.

Azriel Levy, a mathematician from Israel, is comparing ways of presenting the axiomatic set theory.

Ronald J. Gribben, a British mathematician, is concerned with fluid dynamics, and particularly with boundary layers in conducting fluids in the presence of a magnetic field.

The average age of the group is about 29. The fellowships they hold were provided by the Alfred P. Sloan Foundation and conceived on the theory that foreign scientists could contribute much to the American scene and the belief that progress is best nourished by a continuous exchange of ideas.

The Institute Wins for Iraq

■ The seven M.I.T. students who participated in a recent mock United Nations Assembly meeting in Montreal represented Iraq. They would have preferred to represent Israel. Nevertheless, they won the "Best Delegation" trophy.

The criteria for the award were the delegates' knowledge of the problems discussed, their presentation of a country's views, and their abilities in the lobby as well as on the Assembly floor. Sixty schools participated.

One of the resolutions that came up concerned the organization of a peace conference. Unfortunately, the Israeli delegation had to be ejected forcibly when it tried to sit in on an Arab nations' caucus.

Jaime H. de Sola, '60, headed the M.I.T. corps of diplomats, which included one Iraqi, Mumtaz Al Daftary, '61, and one girl, Linda H. Greiner, '60. Others were Gerard J. Stephenson, Jr., '59, George R. Henry, '59, Stephen P. Gill, '61, and Klaus H. Berkner, '61.



FOR SPRING... A WIDE SELECTION OF COOL, LIGHTWEIGHT CLOTHING

We have an unusually distinctive selection of lightweight tropicals, practical 'wash-and-wear' suits and Odd Jackets, colorful sportwear and fine furnishings...all reflecting our individuality and good taste. Catalogue upon request.

111 BROADWAY
NEW YORK 6, N. Y.

46 NEWBURY, COR. BERKELEY
BOSTON 16, MASS.

74 EAST MADISON STREET
CHICAGO 2, ILL.

727 WEST SEVENTH ST.
LOS ANGELES 17, CALIF.

165 POST STREET
SAN FRANCISCO 8, CALIF.

ESTABLISHED 1818

Brooks Brothers,
CLOTHING
Mens Furnishings, Hats & Shoes

346 MADISON AVENUE, COR. 44TH ST., NEW YORK 17, N. Y.
BOSTON • CHICAGO • LOS ANGELES • SAN FRANCISCO



Need
corrugated boxes
in volume?

See your

H&D packaging
engineer



HINDE & DAUCH

Division of West Virginia Pulp and Paper Company

15 Factories, 42 Sales Offices
Sandusky, Ohio

SPECIAL REPORT



Mr. J. EDWARD FEIN NEW YORK LIFE AGENT
at CHICAGO, ILLINOIS

BORN: January 20, 1924

EDUCATION: University of Michigan, B.B.A.

PREVIOUS EMPLOYMENT: Public Accountant

REMARKS: Ed Fein, a college-trained accountant, had a year of practice in this field, then joined New York Life on July 1, 1948. Concentrating on planning

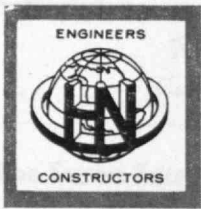
insurance programs for young doctors, dentists, internes and students, Ed saw his sales record start its meteoric rise to establish him as one of the Company's consistent leaders. A Qualifying and Life member of the insurance profession's Million Dollar Round Table, this personable young man has also qualified every year since 1950 for New York Life's highest Honor Club—the Company's President's Council. Outstandingly successful, Ed Fein is one more example of why "The New York Life Agent is a good man to be!"

Note

Ed Fein, like so many other college alumni, is well-established in a career as a New York Life representative. It offers him security, substantial income and the deep satisfaction of helping others. If you or someone you know would like more

information about such a career with one of the world's leading life insurance companies, write:

NEW YORK LIFE INSURANCE COMPANY
College Relations, Dept. N-26
51 Madison Avenue, New York 10, N.Y.



Holmes & Narver, Inc.

JAMES T. HOLMES
M.I.T. '14

D. LEE NARVER
STANFORD '14

Engineering Capabilities

Survey	Structural
Civil	Architectural
Sanitary	Mechanical
Electrical	Chemical

828 SOUTH FIGUEROA STREET
LOS ANGELES 17, CALIFORNIA

SYSKA & HENNESSY, INC.

Engineers

John F. Hennessy '24

John F. Hennessy, Jr. '51



DESIGN • CONSULTATION • REPORTS
POWER PLANT • WASTE DISPOSAL • WATER SYSTEMS
New York City

CHAUNCY HALL SCHOOL

Founded 1828. The School that specializes in the preparation of students for the Massachusetts Institute of Technology.

Ray D. Farnsworth, Principal 533 Boylston Street, Boston, Mass.

ALEXANDER KUSKO, INC.

Consulting Engineers

141 Main Street Cambridge 42, Mass.
ELiot 4-4015

Research and Development in

Magnetics Transistor Circuits
Electric Machinery Control Systems

A. KUSKO '44
P. N. HELLER '51

J. P. BLAKE, JR. '54
J. A. CAUDET '56

LOCKWOOD GREENE

ENGINEERS—ARCHITECTS

Professional Service from Site Selection to Plant Completion
Plant Location Studies

Site Investigations

Complete Design

Supervision of Construction

REPORTS

APPRAISALS

New York

BOSTON, MASS.

316 STUART ST

Spartanburg, S. C.

THE GREAT STAIRWAY FOR SHIPS OPENS

(Concluded from page 301)

25,000,000 tons will move through the new Seaway. By 1968, it is estimated that traffic will have increased to more than 50,000,000 tons, and cargoes moving through the Welland Canal alone will have increased from 40,000,000 to 60,000,000 tons.

Any increase in shipping in the new Seaway depends on many factors, including freight and toll rates, time of transit and, of course, the inertia inherent in changing from long-established patterns of shipping to entirely new methods. The Seaway will have strong competition from other forms of transportation and routes, and growth in trade will depend on how attractive freight and toll rates can be made. Tolls lower than those imposed on ships using the Panama and Suez canals have been announced.

Construction of the Seaway has fired the imaginations of people in the region through which it operates, and there has been much talk of the possibilities of enlarging the canal system which now links the Hudson River at Albany with the St. Lawrence via the Lake Champlain Canal and the Richelieu River Canal in Quebec. By this route the distance from New York City to the St. Lawrence River is 389 miles. The distance, by way of the Atlantic Ocean and up the St. Lawrence, is more than 1,500 miles.

American and Canadian communities bordering on the Seaway may expect dramatic industrial developments in manufacturing fields that can benefit from an ample power supply and convenient transportation for raw materials as well as for finished products.

The Aluminum Company of America already has a large plant at Massena, N.Y., where the Reynolds Metal Company and the General Motors Company also are building factories. Other companies on both sides of the border are making plans for industrial development of the region.

The Seaway will be formally dedicated in June, when Queen Elizabeth and President Eisenhower, Prime Minister John Diefenbaker and Governor General Massey of Canada, statesmen and diplomats, premiers and governors, the great and the near great, will join in an international ceremony celebrating completion of one of the world's great engineering projects.

meissner Engineers

consultants • engineers • constructors

Processing plants. Bulk materials handling and storage. Conveying systems. Ore and minerals processing. Bridge, expressway and interchange design.

JOHN F. MEISSNER ENGINEERS, INC.

300 West Washington Street
Chicago 6, Illinois
ANDover 3-1944

R. C. MEISSNER '43

PROFESSIONAL CARDS

JACKSON & MORELAND, INC.
JACKSON & MORELAND INTERNATIONAL, INC.
Engineers and Consultants
 ELECTRICAL—MECHANICAL—STRUCTURAL
 DESIGN AND SUPERVISION OF CONSTRUCTION
 FOR
 UTILITY, INDUSTRIAL AND ATOMIC PROJECTS
 SURVEYS—APPRAISALS—REPORTS
 MACHINE DESIGN—TECHNICAL PUBLICATIONS
 BOSTON NEW YORK

EADIE, FREUND & CAMPBELL
 CONSULTING ENGINEERS
 500 FIFTH AVENUE NEW YORK 36, N. Y.
Mechanical—Electrical—Sanitary
Air Conditioning—Power—Process Layouts
 James K. Campbell '11

METCALF & EDDY
Engineers

Water, Sewage, Drainage, Refuse and
 Industrial Wastes Problems
 Airports, Laboratory, Valuations
 Statler Building, Boston 16, Mass.

THE KULJIAN CORPORATION
Consultants • Engineers • Constructors

UTILITY • INDUSTRIAL • CHEMICAL
 Power Plants (Steam, Hydro, Diesel), Textile Plants,
 Water & Sewage Works, Oil Refineries, Pipe Lines,
 Army & Navy Installations, Air Fields, Hangars

H. A. Kuljian '19 A. H. Kuljian '48
 1200 NO. BROAD ST., PHILADELPHIA 21, PA.

FABRIC RESEARCH LABORATORIES, INC.

*Research, Development, and Consultation
 In the Fields of Fibrous, Organic, and Related Materials*

1000 Providence Highway Dedham, Mass.
 (At Route 128 and U.S. 1 Interchange)
 W. J. HAMBURGER, '21 K. R. Fox, '40 E. R. KASWELL, '39

GILBERT ASSOCIATES, INC.

ENGINEERS AND CONSULTANTS

Malcolm G. Davis '25, Vice President
 Allen W. Reid '12 E. C. Edgar '35

Steam, Hydro, Diesel, Nuclear Power Plants; Industrial
 Structures; Plant Safety, Utility Rates, Valuations, Reports;
 Purchasing; Chemical Laboratory

New York • READING, PA. • Washington

LAUREN B. HITCHCOCK ASSOCIATES
Chemical Engineers

Industrial Research & Development
 Technical & Economic Evaluations
 Acquisitions of Processes and Plants
 Commercial Chemical Development—Air Pollution Control
 Lauren B. Hitchcock '20 Technical Advisor, John H. Schaefer '26
 60 East 42nd Street New York 17, N. Y.

FAY, SPOFFORD & THORNDIKE, INC.
Engineers

Airports, Bridges, Express Highways
 Water Supply, Sewerage and Drainage Systems
 Port and Terminal Works
 Industrial Plants Incinerators
 Designs Investigations
 Supervision of Construction
 Boston, Massachusetts

CLEVERDON, VARNEY & PIKE

Consulting Engineers

HERBERT S. CLEVERDON '10 WALDO F. PIKE '15
 JOHN A. DOW '23 HAROLD E. PROCTOR '17

Structural Designs Foundations
 Heating, Ventilating, Electric and Plumbing De-
 signs, Industrial Buildings, Reports, Investigations
 120 TREMONT STREET BOSTON 8, MASS.

MAURICE A. REIDY

Consulting Engineer

BRIDGES BUILDINGS
 STRUCTURAL DESIGNS FOUNDATIONS
 CONSTRUCTION CONSULTANT AND ARCHITECTURAL ENGINEER

Estimates and Appraisals

101 TREMONT STREET BOSTON, MASS.

CHARLES NELSON DEBES ASSOCIATES, INC.

ENGINEERS AND ARCHITECTS

Structural, Electrical, Mechanical, Acoustical
 Industrial, Commercial and Municipal Projects

915 EAST STATE ST. ROCKFORD, ILL.
 C. N. DEBES '35

MORAN, PROCTOR, MUESER & RUTLEDGE

CONSULTING ENGINEERS

Foundations for Buildings, Bridges and Dams;
 Tunnels, Bulkheads, Marine Structures, Soil Studies and
 Tests; Reports, Design and Supervision

WILLIAM H. MUESER '22 PHILIP C. RUTLEDGE '33
 415 Madison Ave., New York 17, N. Y.

BREWER ENGINEERING LABORATORIES

Consulting Engineers

Electric Strain Gage Testing • Stress Analysis
 Strain Gage Amplifiers • Strain Gage Switches
 High Temperature Strain Gages

MARION, MASS. TEL. 103
 G. A. Brewer '38 S. P. Cammack '57

CAPITOL ENGINEERING CORPORATION

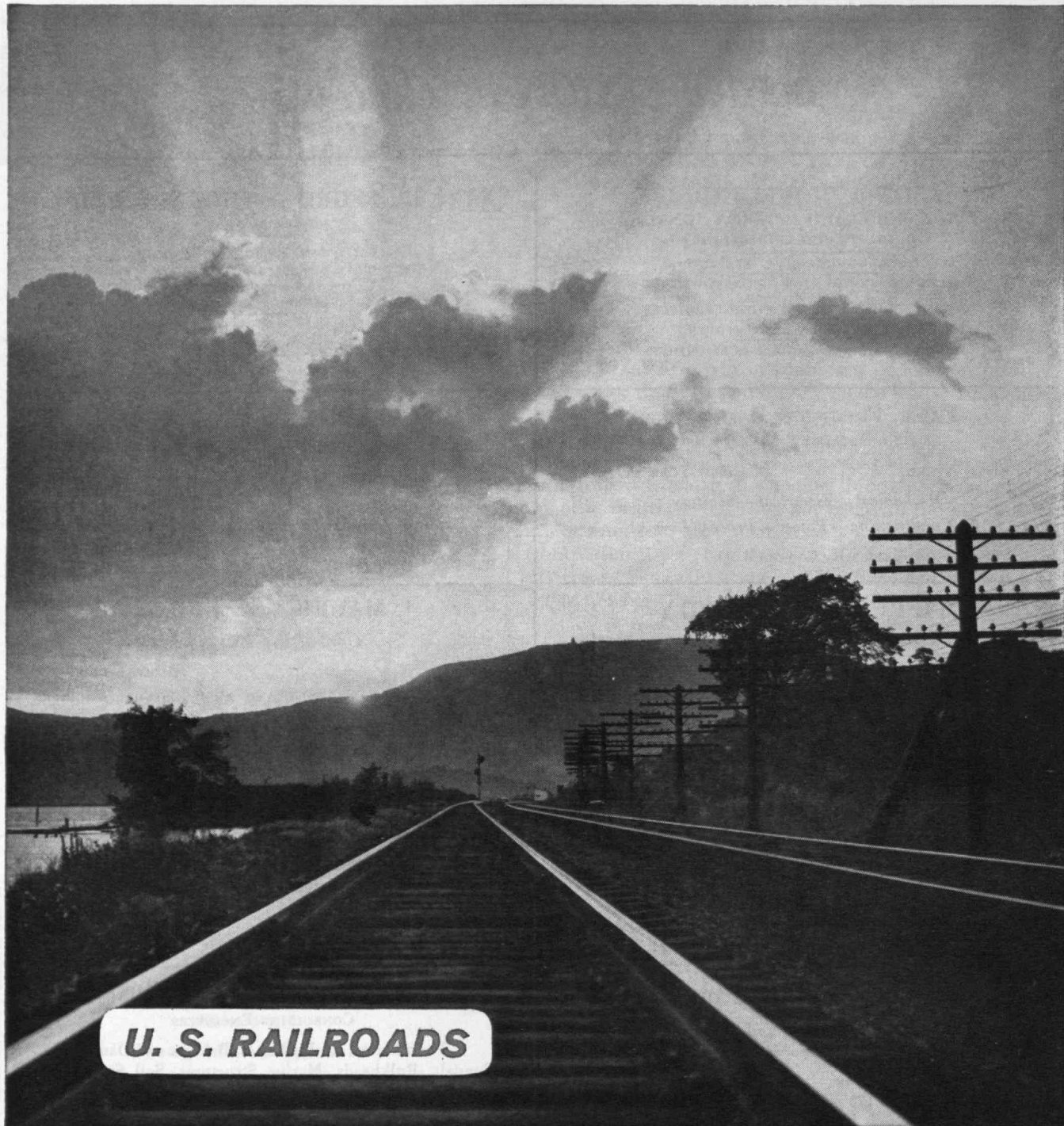
CONSULTING ENGINEERS

DILLSBURG, PENNSYLVANIA

Highways Airports Reports
 Water Supply Surveys
 Sewage Treatment Design
 Bridges Construction Supervision
 Soil Testing

Branch Offices

Rochester, N. Y. Saigon, Vietnam
 Robert E. Smith '41, Vice President



U. S. RAILROADS

Where Engineers Can Move Ahead Faster

America's Railroads offer young engineers a particularly fast track to an interesting and challenging future. The reasons are clear. Our railroads are putting through an enormous program of automation and modernization. They are vital to America's economy and defense. And their need for you is very great. Their present management teams are looking forward to future successors. Retirement rates are currently high; and replacements are brought up from within. If you'd like to consider the unusual opportunities and rewards open to engineers of all types in railroading, see your placement officer or write us at 30 Church Street, New York 7, N. Y. We know you will like working with America's railroads. We've been doing it ourselves for many years—in supplying this great industry with Kerite quality insulated wire and cable.



KERITE CABLE

it's the KERITE that makes the difference



ALUMNI AND OFFICERS IN THE NEWS

Reaching Peaks . . .

Alumni receiving birthday congratulations during the month of April include N. P. AMES CARTER'87 who will become 95 on the 11th and WILLIAM K. CAMPBELL'86 who will be 95 four days later on the 15th; MISS HARRIET FAXON'99 who will mark her 90th birthday on the 4th; 6 who will reach 85 years; and 13 who will become 80, as listed below with dates of birth:

April, 1874 — WILLIAM E. BARBOUR'96 on the 1st; LEEBERT L. LAMBORN'96 on the 7th; MYRON E. PIERCE'96 on the 8th; EDMUND C. LITTLE'98 on the 17th; EDUARDO E. SALDANA'96 on the 24th; and CHARLES E. BATCHELDER'96 on the 25th.

April, 1879 — ARTHUR M. CONSTANTINE'00, WALDEMAR R. KREMER'04, and FRANK A. SMITH'01, all on the 8th; HOWARD N. FLANDERS'03 on the 13th; CHARLES H. PORTER'02 on the 14th; EDWARD S. BAKER'05 and EMERY J. WILSON'04 on the 16th; HENRY H. DUDLEY'04 on the 19th; FRANCIS A. NAGLE'02 on the 20th; MISS ETHEL A. GLEASON'01 on the 24th; OMAR S. SWENSON'03 on the 26th; OSCAR S. PULMAN'06 on the 27th; and MRS. GEORGE H. NOONE'03 on the 29th.

Including these 22, the rolls of the Alumni Association will list 78 nonagenarians and, in addition, 750 octogenarians.

Climbing Upward . . .

In addition to the Alumni recorded on page 292, these others have advanced:

ROBERT S. WOODBURY'28 as treasurer, Society for the History of Technology . . . HARRY T. EASTON, JR.'36 as operations manager, Walter Baker Chocolate plant, General Foods Corporation . . . GILBERT C. MOTT'37 as vice-president in charge of engineering, Bridgeport Brass Company, Bridgeport, Conn.;

CHARLES J. DONLAN'38 as assistant director, Project Mercury, National Aeronautics and Space Administration . . . MILLARD M. BRENNER'39 as staff engineer, Atronic Products, Inc., and General Atronics Corporation . . . HUMBERT P. PACINI'39 as staff consultant, Research and Development Division, Allen B. Du Mont Laboratories, Inc.;

L. L. FELLINGER'41 as an assistant director, engineering department, Organic Chemicals Division in St. Louis, Monsanto Chemical Company . . . CHARLES W. WYCKOFF'41 as a member, Needham School Committee . . . LUTHER DAVIS, JR., '42 and HUGH R. BOYD'47, respectively, as assistant manager for planning and co-ordinating current program and as assistant manager responsible for administration, Research Division, Raytheon Manufacturing Company;

ROBERT W. KING'42 as director of engineering, Union Carbide Chemicals Company, division of Union Carbide Corporation . . . HARVEY I. KRAM'42 as operations consultant to the president, Revlon,

Inc. . . . CHARLES A. HATHAWAY'43 as director of engineering, Air Impeller Division, the Torrington Manufacturing Company, Torrington, Conn.;

CHARLES J. LAWSON, JR.'43 as assistant director of manufacturing services, International Business Machines Corporation . . . ROBERT E. LATIMER'46 as assistant to the vice-president of engineering, Air Products, Inc., Allentown, Pa. . . . ROBERT E. HARRISON'47 as production manager, the Dallas News, Dallas, Texas;

JAMES R. WEINER'47 and E. EVERET MINETT'41, respectively, as assistant vice-president, Univac engineering, and as chief engineer, commercial engineering, Remington Rand Univac, division of Sperry Rand Corporation, Philadelphia, Pa. . . . SAMUEL LEVIN'48 as a member, Massachusetts Commission on Atomic Energy;

ROBERT W. ROOP'48 as vice-president, Atronic Products, Inc. . . . the REVEREND JAMES J. DEVLIN'49 as secretary, newly formed Society for Applied Spectroscopy . . . KENNETH D. GARNJOST'50 as chief engineer, Moog Valve Company, Inc., East Aurora, N.Y.;

THOMAS M. HAHN, JR.'50 as dean of arts and sciences, Kansas State College . . . ROBERT L. PLOUFFE, JR.'50 as associate laboratory director, Research Division, I.T.T. Laboratories, International Telephone and Telegraph Corporation . . . DAVID E. WEBSTER'50 as vice-president—manufacturing, Beneke Corporation, Columbus, Miss.;

RICHARD L. BEST'52 as head, circuit design and development work, Digital Equipment Corporation, Maynard, Mass. . . . GEORGE D. PRESTWICH'52 as manager, new Defense Industries sales unit, Heavy Military Electronics Department, General Electric Company, Syracuse, N.Y. . . . JOHN T. NOLAN, JR.'55 as head, exploratory chemicals group, Chemicals Research Department, Texaco Center, Beacon, N.Y.

Sharing Knowledge . . .

At least six Alumni are among the contributors to the fifth edition of the *Radio Engineering Handbook*, edited by Keith Henney. Tech-authored chapters include: "Telephony," by HERMAN A. AFFEL'14; "Electronic Oscillators," by JAMES K. CLAPP'23, FRANK D. LEWIS'37, and two others; "Facsimile," by AUSTIN G. COOLEY'24; "Basis of Radio-Communication Engineering," by BEVERLY DUDLEY'35; and "Alternating-Current Measurements," by BENJAMIN J. DASHER'52 and a coauthor. (New York: McGraw-Hill Book Company, 1959, 1800 pages, \$25.00.)

A recent book by NORBERT WIENER, Professor of Mathematics, is entitled *Nonlinear Problems in Random Theory*. (New York: The Technology Press of M.I.T. and John Wiley and Sons, Inc., 1958, 22 pages, \$4.50.)

Obituary

WILLIAM L. CREDEN'90, 1958
CHANNING M. WELLS'92, February 1*
CHARLES B. BEACH'94, January 4*
HENRY O. LACOUNT'94, February 22
CHARLES M. ADAMS'95, January 15*
PAUL W. LITCHFIELD'96, March 18
CHARLES B. STEBBINS'97, 1947
FRANK EMERSON'00 January 27
FRANCIS K. BAXTER'01, no date given*
MRS. MARGARET H. SHURCLIFF (MARGARET H. NICHOLS)'03, February 28
ARTHUR F. BELDING'05 September 29*
RENSHAW BORIE'05, July 1*
HARRY M. NABSTEDT'05, December 8*
ALBERT H. SMITH'05, November 19*
HARRY W. BUKER'06, May 20, 1958
HARDY CROSS'08, February 11
EDWIN M. PRICE'08, January 11, 1957*
FREDERICK J. KING'09, January 21*
HAROLD M. SYMONS'09, March 18, 1958
F. SPENCER AREND'10, February 6, 1958
ALEXANDER G. BATSNER'10, September 16*

RICHARD W. LEWIS'10, January 25*
OLIN V. CHAMBERLIN'11, January 19
ORVILLE B. DENISON'11, February 13*
LEWIS DAVIS'12, February 7*
IRA W. KNIGHT'13, February 16
NATHAN H. POOR, 2d,'13, January 22
ALLEN W. SPICER'13, December 12
MERVIN W. BLISS'16, February 19, 1958
ROBERT A. MILLER'16, January 11
FRANK E. RICHARDSON'16, July 4*
SIDNEY S. BATCHELDER'17, February 20
ROBERT N. GAY'17, January 9*
RALPH L. WHITCOMB'18, January 11*
MOACYR R. DIAS'19, June 9, 1958*
ROBERT L. FALKENBERG'19, October 17*
WALTER C. HAGERTON'21, January 4*
L. GEORGE HOROWITZ'21, February 9
G. FRANK LORD'21, January 30*
BENJAMIN F. ADAMS'22, November 4*
SAMUEL A. GAYLEY'22, January 28
JESSE E. JONES, JR.'22, December 6
WILL I. LEVY'22, January 29
WILLIAM S. BRACKETT'23, January 8*
JOSHUA R. ELLIOTT, JR.'23, May 21, 1958*

SOMERBY R. EVANS'23, November 6*
LEO S. HAYES'23, January 31
VINCENT H. LARRANAGA'23, April 19, 1958*
HENRY F. BERTHERMAN'24, March 8, 1957*

JOSEPH M. KIERNAN'25, February 13
CECIL A. P. THOMAS'26, January 21
EARL C. WHEELER'26, February 16
MRS. RAYMOND H. ADKINS (OLIVE S. BRUCKHEIMER)'27, September 5, 1958
WILLARD E. ROBINSON'29, May 13, 1958
CHARLES H. KAISER'31, August, 1955
GEORGE A. PIPPY'31, August 11, 1958*
ALBERT M. CHAMBERS, JR.'33, January 28

L. ERIC JONES'35, February 26
CLEON C. DODGE'37, January 4*
ARTHUR P. MCCABE'40, June, 1957
GEORGE LYNDE GATELY'42, January 6*
CASIMAR T. WITTL'42, January 28
ORVILLE L. MILLS'49, January 22
*Further information in Class Notes

NEWS FROM THE CLUBS AND CLASSES

CLUB NOTES

Cincinnati

The M.I.T. Club of Cincinnati held a dinner meeting on February 4 at the Wishing Well Restaurant for members and their guests. After cocktails and dinner, the evening's program was devoted to investment opportunities on the stock market. Mr. Wallace Sarraan and Mr. Ronald Killinger of Hill and Company first showed a movie about the activity on the floor of the exchange and then held an open discussion about investments. The subject generated considerable interest because the attendance at the meeting was unusually high.

Members of the M.I.T. Club were invited to attend a lecture by Professor Harold Edgerton '27 at the General Electric Co., Evendale, Ohio, on January 29. Professor Edgerton was the guest of the General Electric Company, and we hereby express a public word of thanks to G.E. for the invitation.

Members who attended the February 4 dinner were: C. D. Axelrod '48 (Club President), Charles Bates '57, William Beckett '34, Stephen Chamberlin '51, Sam Crew '34, L. T. Cummings '44, Wilton Fraser '47, Val Friedrich '22, Norman Gordon '43, Eddy Hair '54, Frank Iskra '48, Bob Keefe '51, Ed Kruckemeyer '11, Alfred Kullman '25, Harold MacKay '51, Malcolm McGregor '42, George McIlveen '24, Clinton Moore '47, Steve Moxley '50, Arthur Neave '16, Gerhard Reethof '47, Stewart Rowe '43, George Schultz '51, Jim Stolley '52, Charles Straley '31, and David Thomas '53. — JAMES S. STOLLEY '52, *Secretary*, 11 Beverly Drive, Hamilton, Ohio.

Northern New Jersey

On Tuesday, March 10, the club was addressed by Mr. Polaris, Rear Admiral William F. Raborn, Jr. The Admiral, one of the Navy's top scientific minds, gave a very complete story on the Polaris, including such aspects as our national position and the effects of ballistic missiles on same. He took us through some of the military thinking on important characteristics of ballistic missiles and the need for a submarine launching system. Bringing generalities down to specifics, he described some of the special Navy organization established to develop the Polaris and gave a report on progress to date. He wound up the program with a short film which showed several aspects of the Polaris and some of its components.

Admiral Raborn, an aviator for 25 years and first director of the Navy's Fleet Ballistic Missile Program — Polaris, was able to draw from his intimate knowledge of the subject in his presentation, making for one of the most interesting programs of the spring season.

The meeting, at Suburban Hotel in Summit, was attended by 52 members, all of whom got insight into the complexity of modern military hardware. — PAUL M. HELLMAN '24, *Assistant Secretary*, 616 Forest Ave., Westfield, N.J.

Southern California

The M.I.T. Club of Southern California held its annual dinner meeting on January 20, 1959, at the University Club in Los Angeles. Guest speaker was Allen F. Donovan, a Vice-president of the Space Technology Laboratories, Inc.; director of the Astrovehicles Laboratory; and former Summer Session lecturer at M.I.T. Mr. Donovan spoke about the Air Force Pioneer Moon Rocket Program.

Nominations and elections for the year 1959 took place with the following results: President, Jay Zeamer '40; Vice-presidents, Richard S. DeWolfe '36 and Robert M. Copsey '44; Treasurer, T. Gary Loomis '44; Secretary, Joseph W. Marshall '53; Assistant Treasurer, Rudy Cataldi '50; Assistant Secretary, Louis Young '50; Archivist, Hiram E. Beebe '10. Governor, as immediate past president, is Robert Welles '15. Governors at large are: James T. Holmes '14, Raymond B. Stringfield '15, William H. MacCallum '24, and Anthony Thormin '27. Governors for classes are: '24-'28, George Cunningham '27; '29-'33, Mrs. C. S. Sammis '29; '34-'38, Page Golsan, Jr. '34; '39-'43, J. S. Cullison '41; '44-'48, Vic Stanley '44; '49-'53, Jack Mankes '52; '54-'58, Howard Phillips '57.

The Alumni attending the meeting were: D. Batchelder '28; H. Beebe '10; A. Bertsch '46; G. H. Bell '42; E. E. Bennett '07; S. Bessen '44; A. J. Boardman '55; R. H. Boden '34; H. A. Burr '40; J. Byrne '24; R. Cataldi '50; T. Chang '37; R. M. Copsey '44; H. R. Crowell '15; J. S. Cullison '41; G. Cunningham '27; R. Day '48; A. B. Daytz '28; J. Delmonte '34; D. DeWolfe '36; A. B. Deyarmond '30; J. J. Gershuny '53; J. L. Goheen '37; P. Golsan, Sr. '12; B. Helfand '43; D. M. Hughes '15; J. Hyman '57; B. Kallejian '16; M. Karr '37; J. B. Kendrick '34; E. R. Keown '50; H. Lieske '46; T. G. Loomis '44; S. Lundén '21; W. H. MacCallum '24; J. Mankes '52; A. Markus '44; J. Marshall '53; P. Neuschatz '51; W. K. Overturf '40; H. Pardee '09; Rear Admiral J. B. Pearson '28; H. Phillips '57; D. D. Rodger '48; Mrs. C. S. Sammis '29; E. Schuettner '51; H. Seykota '39; V. Stanley '44; A. Schwartz '47; M. Untersee '19; R. Welles '15; C. Woodmansee '44; L. Young '50, and J. Zeamer '40. — JOSEPH W. MARSHALL '53, *Secretary*, Bymco Engineering, 904 West Hyde Park Boulevard, Inglewood, Calif. LOUIS YOUNG, *Assistant Secretary*, 2234 South Spaulding Ave., Los Angeles, Calif.

Washington

Since the last club notes were written (those appearing in the December, 1958,

edition of The Review), the M.I.T. Club of Washington has held three events. On Friday, October 17, 1958, a capacity turnout of 185 persons filled the Powell Auditorium of the Cosmos Club to hear Dr. C. Stark Draper '26, Head of the M.I.T. Department of Aeronautical Engineering (now Department of Aeronautics and Astronautics) deliver an illustrated talk on "Inertial Guidance." An extended question and answer period followed. The dinner meeting was chaired by President Charles E. Loucks '31.

On Monday, December 29, 1958, the club held its third successive Christmas luncheon. The event, held at the Army and Navy Club, attracted 66 persons of whom 34 were Alumni, 20 were area Tech students home for vacation, and 12 were high school students who are applying for admission to M.I.T. Immediate Past President Robert W. Blake '41 was the event chairman. Mr. Thornton W. Owen '26, Chairman of the board of the Perpetual Building Association; Mr. Christopher P. Witze '60; and President Loucks addressed the group.

The major event of the year was a joint dinner meeting of the M.I.T. and Harvard Clubs of Washington held Thursday, February 5, 1959 at the Hotel Mayflower. Dr. James R. Killian, Jr. '26 addressed the group on "Science and Public Policy." The joint meeting was conceived when both the Harvard and M.I.T. Clubs of Washington approached Dr. Killian to have him speak during February. The February 5 event, which replaced an M.I.T. Club meeting scheduled for February 20 at the Cosmos Club, was very well attended, especially by M.I.T. Alumni and their guests. (The M.I.T. representation was 277 of the 338 present.) William R. Ahrendt '41 was master of ceremonies. The large turnout resulted from a mailing to all 1,450 known Alumni in the Washington area followed by a systematic telephone canvass which utilized all members and many nonmembers. The telephone follow-up was arranged by Ernest L. Osborne '14, Vice-president for membership development. Anthony J. Navoy '50, Assistant Treasurer, and his wife, Edna, handled the resulting stream of reservations.

The next event of the varied 1958-59 club program is a dinner-dance scheduled for Saturday, April 11, 1959, at the Army and Navy Club. The decision to proceed with the dinner-dance was made at the executive committee meeting held February 9, 1959. The plans are based on an attendance of from 40 to 60 couples. Lieutenants John G. Beebe-Center, Jr. '56 and James B. Brook '54, U. S. Coast Guard, are cochairmen for the event. The annual dinner meeting including election of officers will be held late in May.

Also planned for this club year is publication of a directory of all Alumni and Alumnae in the Washington area. George

R. Thompson, Jr., '53 is in charge of this project. The necessary information has been obtained from approximately 650 Alumni. A drive to obtain the information from the other 800 will be started soon. The last directory for this area was published in 1953.

As of February 14, 1959, the paid membership for the 1958-59 club year, which ends August 31, 1959, stood at 341; this is more than twice the usual number for this time of year. — PAUL M. ROBINSON, JR., '44, *Secretary*, 4439 South 34th Street, Arlington 6, Va. HOWARD K. SMEAD '51, *Review Secretary*, 6732 Nevius Street, Falls Church, Va.

Western Pennsylvania

This club is fortunate in that the University Club of Pittsburgh has a Saturday night dance which we may attend from time to time. On December 13, 1958, this club took advantage of this opportunity after having the usual good dinner served in the Cardinal Room. The group was small, but all rated it the best dinner and dance we had attended.

On Monday, January 19, 1959, seventeen Alumni heard Professor Robert S. Woodbury '28 speak on "Science, Engineering, and the Humanities." His question on the proper education of scientists and engineers is very timely with all the present emphasis being placed on the mass education of our high school graduates in various technical fields. We invite all to reread his article in the January, 1959, edition of *The Review*.

For the information of Alumni visiting or moving to Pittsburgh, we meet at the University Club, 123 University Place, Oakland, Pittsburgh, Pa., at 6:30 P.M. on the third Monday of each month from November through June. We welcome you all. — STUART D. MILLER '32, *Secretary*, 3043 Dwight Avenue, Pittsburgh 16, Pa. GEORGE M. COLVILL '51, *Assistant Secretary*, R.D. #1, Eightyfour, Pa.

CLASS NOTES

1891

Here is another letter from Mrs. Robert Ball, bearing such intimate and affectionate details of one's family life as it is carried on in Cambridge, England, 60 Storey's Way; we can just see our classmate Robert as he makes out for his morning walk on the college backs, with the river and its great trees, the wonderful college buildings — all as it has stood, essentially as now, since long, long years ago when our Cambridge, on the Charles, was a howling wilderness.

Well, we are tempted to cry: "Good luck to you, dear Robert, and to your dear, affectionate wife, Olga. You seem very near and dear to us on this side of the water." Here is the letter: "August 12, 1958. Dear Mr. Brown: It was indeed good of you to write, and to write so warmly about Robert. We both appreciated your letter very much. Robert is well but very feeble. He will be 89 in little more than a week. Alas, his memory is no longer reliable so that letter writing

is almost an impossibility to him. He, however, cherishes M.I.T. with a deep affection; and any news of the classmates who still gather at your reunions is most welcome.

"On fine days he can get out for a short walk, and he is always pleased to meet a kindly neighbor and have a chat. I read aloud anything I think would interest him. He enjoys a beautiful sunset which he can see from his study; and his long sight being remarkable, he will call my attention to some bird that he recognizes in a tree.

"Robert's two grandsons, Robert Grant Ball (the eighth Robert in descent in the Ball family) and Robert O. Ball Barnes, are both at public schools in Wiltshire, England. Robert Ball leaves Marlborough College at Christmas after four years at that excellent school. 'Rolls' Barnes is finishing his fifth term at Repton, a school with an ancient tradition. These details may be of little interest in *The Technology Review*, but I send them on chance. With our best regards to all who remember Robert, Yours sincerely, Olga Ball."

The Secretary is occasionally reminded by Mother Nature's hints and suggestions that life on this earth is not eternal but has an end. There are 18 of us, Class of '91, all about 90. If some are younger, that shows they were precocious youngsters in September, 1887, when we signed up. Our term has been spent in a most marvelous period of conscious life on this planet. When Nature brought us in there were, perhaps, awe, hopes, and joy; why should we not have somewhat the same satisfaction and gratitude when Nature calls us out?

Why not turn to the great thinker and poet of India for a suggestion of how it might be for us? Have we oldsters the courage and stamina for that? "I have got my leave. Bid me farewell, my brothers! I bow to you all and take my departure.

"Here I give back the keys of my door — and I give up all claims to my house. I only ask for last kind words from you. . . . At this time of parting, wish me good luck, my friends! The sky is flushed with the dawn and my path lies beautiful. I start on my journey with empty hands and expectant heart. — From Tagore's 'Gitanjali.'"

The last news about Carl Bunker is: he has left Peter Brigham Hospital and is now in the Naples Nursing Home, Naples Road, Brookline. He is able to read correspondence with a glass. — CHANNING BROWN, *Secretary*, 15 Forest Avenue, Hastings-on-Hudson, N.Y.

1892

It is the sad duty of the Secretary to report the passing on of another of our classmates, Channing M. Wells, who died on February 1 in Palm Springs, Calif. He was with us in Course IX. Leaving the Institute, he joined the American Optical Company of which his father had been in control since 1869. He became its president in 1913. He took an active part in the development of Sturbridge Village and maintained his residence there during summers, putting in winters at Palm Springs.

The Secretary is indebted to the *New York Times* for the following article covering his career: Channing Wells, Industrialist, 88: President from 1913 to 1936 of American Optical Dies — Aided its Expansion. Southbridge, Mass., February 1. Channing McGregory Wells, a former trustee of the American Optical Company and its president from 1913 to 1936, died yesterday at Palm Springs, Calif. His age was 88.

"Mr. Wells and his brothers, J. Cheney Wells and the late Albert B. Wells, directed the expansion of the company from manufacturing lenses and eyeglass frames to the production also of artificial eyes, scientific instruments, and such items as helmets for welders and dust filters for industrial workers to increase job safety. Last year the company marked its 125th anniversary. Mr. Wells's father assumed control of it in 1869. The son, after attending Massachusetts Institute of Technology, joined it in 1891.

"In successive posts as a director, treasurer, vice-president, president, and trustee until 1951, Mr. Wells saw the concern's operations expand from the original plant here with 600 workers to nine plants in this country employing 10,000 workers. In 1957 the company reported that its sales that year amounted to \$78,000,000.

"Mr. Wells was a former director of the Gillette Safety Razor Company, the Warren Steam Pump Company, the Southbridge Water Supply Company, and the Southbridge Savings Bank.

"He leaves his wife, the former Mrs. Lucille Hannan, a sister of his first wife, the late Mrs. Irene Kelley Wells. Surviving also, besides his brother, are three children of his first marriage, A. Turner Wells of Boston, Mrs. Elizabeth W. Fox of New Canaan, Conn., and Mason B. Wells of San Francisco; and eight grandchildren. — CHARLES E. FULLER, *Secretary*, P.O. Box 144, Wellesley 81, Mass.

1894

The Secretary hopes that all members of the Class have received the letter from President Wilson of the Alumni Association, and will give heed to his words, and, if at all possible, will make a strong effort to be in Cambridge for Alumni Day (and for our 65th reunion) on June 15. It should be a distinguished occasion, with the inauguration of Dr. Julius Stratton as the 11th president of M.I.T. So far as the Secretary remembers, no class has celebrated its 65th anniversary; so perhaps we can start a new tradition, even if numbers are almost microscopic. Unfortunately there are extremely few of us in this area who can act as hosts. But we shall be glad to try.

A recent change of address is that of Fred C. Baker, II, who has removed from East Templeton to 8 Grace Court, Gardner, Mass. Course II men especially will remember Fred as a quiet and very friendly fellow student. He retired from active work several years ago, and we hope he is well and enjoying his old age.

One by one our classmates are passing over to the now large and silent majority.

With deep regret, the Secretary reports that Charles Burr Beach died at his home,

29 Parker Street, Rockport, Mass., on January 4 of this year. Charles was born October 17, 1871, in Dubuque, Iowa, son of James and Caroline (Wilson) Beach. He attended the schools of his native city and came to M.I.T. in 1890, entering the Course in Chemical Engineering. His father had long before established the Beach Soap Co. Upon graduation Charles at once entered the firm; and he and his family operated it for many years, until his retirement in 1948, when he removed to Rockport, where he thereafter resided. In 1902 he married Miss Elizabeth Brain of Springfield, Ohio, and three daughters were born of this union. In Dubuque he was very active as a member of the First Congregational Church and served as superintendent of the Sunday School, clerk of the church, and deacon. He was highly respected in the community. After moving to Rockport, he and his wife were active in the Congregational Church activities. Surviving him are his widow; his daughters, Sarah W. (Mrs. Theodore Hunt) of Columbus, Ind., Elizabeth B., wife of Dr. C. Bruce Brown of Rockport, and Mary B., of Bethesda, Md.; six grandchildren; and a brother, Edward James Beach of Dubuque. The funeral was at the church in Rockport, and interment in Dubuque.

A cousin, Irving E. Beach, from Lawrence, was also a member of our Class, graduating in chemistry; he died a few years after graduation.

Before these words are read the Secretary expects to have spent a long fortnight in possibly sunny Florida. — S. C. PRESCOTT, *Secretary*, Room 16-317, M.I.T., Cambridge 39, Mass.

1895

Class President Alfred P. Sloan, Jr., a man active in many capacities in addition to being president of the Alfred P. Sloan Foundation, was named a member of the national council of the National Planning Association last December. The council is composed of leaders in agriculture, business, labor, and the professions from all over the country. Its purpose is to encourage co-operation among the major private groups and to promote public knowledge of planning studies sponsored by the N.P.A. and other groups. The N.P.A. works through standing committees of leaders in agriculture, business, labor, and the professions to conduct research in economics and on questions of national policy. Notice of Mr. Sloan's appointment came from Andy Fuller.

Former registrar and dean of students at Wentworth Institute, Charles M. Adams, died at his home in Roxbury on January 15. Previous to his relationship with Wentworth, he had been engaged in the rubber business as a machine designer and sales executive. He had been retired for several years.

He had long been active in church work, serving as deacon, treasurer, and Sunday school superintendent at the Eliot Congregational Church. In 1915, he founded and became the first director of the Eliot Church League for Children. He had been president of the Massachusetts Sunday School Association and had served as Scoutmaster in Roxbury.

Mr. Adams was an officer in the Boston Guild for the Hard of Hearing; a life member of the Washington Lodge of Masons, and a member of the Mount Vernon Royal Arch Chapter. He leaves a sister, Mrs. Ella Adams Sawyer of Roxbury. — LUTHER K. YODER, *Secretary*, 69 Pleasant Street, Ayer, Mass.

1896

Ralph Henry writes that he enjoys reading *The Review* and confesses that he has neglected to do his bit to make class news, so he sends this letter as he promised over the phone to do: "I tried semiretirement after our magnificent reunion at East Bay Lodge in 1946. Every moment of that stellar expedition is a clear and often summoned memory. But retiring does not work at all with me and I have deliberately thrown that retirement idea into the ash can. I make it a point to spend at least half my time in the open regardless of the weather; I have plenty of wood chopping and gardening exercise and I am more than glad to say I have no physical or mental difficulty. [Ponce de Leon should have tried New Hampshire when he failed in Florida. — Sec.]

"A couple of weeks or so ago a well-to-do Boston attorney asked me to build an adequate monument on the rock summit of the Endicott Mountain here at the Weirs. He has put the matter entirely in my hands to promote, build, furnish, and dedicate to the public use in a location without parallel in grandeur in all New England. The enclosed clipping from my home town *Laconia Evening Citizen* is as follows: 'Ralph Coolidge Henry of Boston and Gilford, architect, is working on a study for the development of one of the most attractive lake and mountain sites in the East, at the Weirs. Attorney William Gordon of Boston uncovered this almost matchless view some 10 years ago. Since then, considerable work was done in building of roads and cutting of standing timber to open the view.

"In recent years this location has become a Mecca for both professional and amateur photographers and others. Many have termed this view a veritable Chateau Frontenac site. No other New England state or other site in the East affords a comparable sweep of an entire horizon unfolding such a panorama of lake and mountains, Mr. Henry says."

Fred Damon continues to do fairly well but says his arthritis precludes any thought of attending a class meeting. Henry Hedge is pretty well but will wait for spring to decide whether he'll put his boat in the water this season. Although Bob Davis has given up his office in the church in Waltham and his membership in the golf club at Yarmouth, he is moderately active and plans on spending the summer as usual on Cape Cod. — JAMES M. DRISCOLL, *Secretary*, 129 Walnut Street, Brookline 46, Mass. HENRY R. HEDGE, *Assistant Secretary*, 105 Rockwood Street, Brookline 46, Mass.

1897

I am sorry to report no communication of any kind from a member of our Class during the past month; hence, no news.

We have had a cold winter here in New England, so our local members may be frozen in. Others may suffer from writer's cramp or, possibly, merely a condition of general lassitude. Another thought suggests that the preparation of data for our federal and state income tax returns — and a careful study of how it will be possible to pay them come April 15 — may have so absorbed and debilitated our members that insufficient energy and enthusiasm remained to write even a short note with a small bit of news to your Secretary.

One merely complaining about our overburdening taxation would not be out of place, for the more publicity given such matters the better. We are not optimistic about any near-term relief, however.

You all received, no doubt, the interesting illustrated booklet published by the Alumni Association entitled "M.I.T. Alumni Make News in 1958." There surely are other members of our Class of '97 besides Irénée du Pont worthy of mention therein if they were not so modest and shy about revealing their accomplishments, their honors, or even their travels.

Alumni Day on June 15 has an extraordinary appeal this year in view of the fact that President Julius Adams Stratton '23 will be formally inaugurated on that day as the 11th President of the Institute. Wake up, fellows; let's have a good representation on that occasion. — JOHN P. ILSLEY, *Secretary*, 26 Columbine Road, Milton 87, Mass.

1899

Because some classmates never respond to requests for information about themselves, their activities, hobbies, and so forth, I often have to resort to devious means to secure material for this column. Here is one such example of undercover work: George E. Lynch is a retired mechanical engineer and lives in Los Angeles. There are some indications that he should have taken the course in geology; locally he is known as a "rock hound" because he is seen walking up and down the beaches, picking up a pebble or a bit of rock which he takes home and polishes. The secret is that these rocks are really bits of Monterey jade, which George makes up into jewelry. While rock hunting along the beaches at Santa Barbara and Monterey, he wears loud plaid shirts and dinky little ties. A beret completes the outfit. When seen in this garb, leading his pet Persian kitten "Lady Fluffy Mao" on a leash, he is a target for all camera fans. (Mao is Chinese for "cat.") George (nicknamed "papa san" by his Japanese gardener) has also made a name for himself by designing two chaise longues, an arm chair, and a footstool out of bamboo given to him by a Chinese friend, Dr. Sung. Also he has built a coffee table, two small tables, a floor lamp, a rack for music, and a number of other pieces of difficult design. For your information, George, I have been in L.A. but once, some 15 years ago, and at that time did not get off the plane. My seatmate, so far as I am aware, was not a Princeton man.

Mental telepathy may be very accurate, but your Secretary would much prefer to receive personally written notes for this column.

Carl S. Milliken, VII, whose recent death was recorded in last month's Review, taught biology at Ripon College, Wisconsin, for a number of years after graduation. In 1908 he was appointed professor of biology at Throop Polytechnic Institute, Pasadena, Calif., now called the California Institute of Technology. Afterward for many years, he was with the Sunkist Growers citrus fruit marketers and the Agricultural Experiment Station. In recent years Carl devoted much time to the culture of iris and day lilies for which, in 1953, he received the American Iris Society Medal as the outstanding hybridizer in the United States. The above facts were received through the courtesy of one of Carl's two sons, Stewart S. Milliken.

Classmates are again reminded to let the Secretary know if they are planning to attend the 60th reunion of the Class next June. —BURT R. RICKARDS, *Secretary*, 349 West Emerson Street, Melrose 76, Mass. PERCY W. WITHERELL, *Assistant Secretary*, 84 Prince Street, Jamaica Plain 30, Mass.

1901

I have just received notice (February 7) of the death of Francis Baxter, III, in Pasadena, Calif. I have no further information. The replies to the class letter are beginning to come in and I will relay some of their information. The first reply was from our enthusiastic vice-president, Ed Davis. He says, among other things: "As of December 31 with a diminished class roll we are ahead of last year in number of givers, per cent of participation, total gifts, and average gifts. This is because many fellows have raised the amount of their contribution over last year. We're still ahead of the classes up to 1904 and one or two later; but I can't say as much, unfortunately, for our per cent of participation. We're still under 40 per cent." Ed says that if possible he wishes someone motoring to the reunion and passing near Waterbury could pick him up. He would be glad to hear from any such person.

Anthony Peters, I, of Westwood, Mass., reports: "Still up and around. After my last physical the doctor told me to 'double up' on my alcohol. Would you call that good or bad news? With the mercury at zero, next June seems too far off for promises; but we hope to be there." He enclosed a poem from the local newspaper which is too long to give here. However, it is very appealing. I hope he will read it to us at the reunion.

Willard Dow, IX, says: "I spent December in western Los Angeles with my daughter and her family — most of the time in the swimming pool or reading and sleeping alongside in a chaise longue — life of Riley. Since my return I've had a touch of housemaid's knee. The Doc (Moore 1903) says I should have lugged the whisky upstairs instead of the case of ginger ale. However, I beat the squash pro four straight yesterday. So I'm in business again."

Charles Lincoln, V, from Saugerties, N.Y. writes: "I am a part-time teacher of languages, sciences, and mathematics and am engaged in writing a novel which will probably bear the title *Cry of the Unborn* and will propose the awakening of mankind to a greater life with a goal more glorious. It is a madly romantic story of sacrifice and love, upholding the theses that the spirit of man at best is the will to beauty; that life is, or should be, battle for beauty; and that love, beauty, and divinity are the same. The world is saved in the end from the third great war by the successful conclusion of a strange international romance."

You should shortly receive a questionnaire concerning the coming reunion which will occur on Friday, Saturday, and Sunday, June 12, 13, and 14. Please answer this promptly so that proper arrangements can be made. The committee is working hard to give you a good time. It is hoped that your appreciation will be shown by a large attendance. —THEODORE H. TAFT, *Secretary*, Box 124, Jaffrey, N.H. WILLARD W. DOW, *Assistant Secretary*, 78 Elm Street, Cohasset, Mass.

1903

Recently, as a house in Topsfield, Mass., was being emptied of furnishings, a large framed picture of the Alumni outing at the Relay House in Nahant in 1909 was discovered and later turned over to Ike Atwood, our class representative to the Alumni Council. He was rather astonished to find a group of our classmates in the center of the photo, wearing broad-brimmed hats bearing the '03 numerals. Just why our Class, which was one of the then more recently graduated, should occupy such a prominent place in the picture was a mystery. Now it can be told. Gilbert H. Gleason, who at that time was quite active in Alumni affairs, was chairman of the entertainment committee. On leaving the excursion boat, the Alumni formed in a long procession by classes, the oldest in the lead. That meant that in grouping up for the picture '03 would be pretty much out of sight. That would never do; so at the right moment, Gib broke the line and turned the '03 group in where he wanted them, right in the middle, as appears in the picture. Many of the faces are clearly recognizable. The picture will be turned over to the custody of the Alumni Association, perhaps for display at our 60th reunion.

Gib offers his apologies to the rest of the Alumni, even if somewhat belated. He is spending the season at Winter Park, Fla., as is Jim Welsh; and Gib reports that Hewitt Crosby plans to call, while attending a convention of the Audubon Society. W. C. Lounsbury is also a Florida resident at 1461 Maravilla Avenue, Fort Myers. G. H. Clapp is still active on engineering jobs in southern California, where weather conditions are supposedly ideal. He reports the past season has been unusually erratic, temperatures ranging from above 100 degrees to below 24 degrees, resulting in severe damage to citrus and other crops, despite smudge pot protection. He would wel-

come calls from classmates at his snug home, 1432 West 16th Street, San Pedro, Calif. —LEROY B. GOULD, *Secretary*, 36 Oxford Road, Newton Centre 59, Mass. AUGUSTUS H. EUSTIS, *Treasurer*, 131 State Street, Boston 9, Mass.

1904

Class notes secretaries ought to subscribe to a clipping bureau, for every day the papers have something to say about Tech men. One would think there would be nothing about "Rambling wrecks from Boston Tech" like '04 men, but recent editions of these notes show there is life in some of the old boys yet. It is nothing new for Herb Kalmus to make the headlines, and sure enough he has done it again. The following item is lifted from the January 28 issue of *Variety*. "Like the old days: Whatta lineup lunching at the Vine Street Brown Derby: Bob Hope, Eddie Cantor, Bob Young, Ricardo Cortez, Boris Karloff, George Burns, Y. Frank Freeman, Dr. Herbert Kalmus, George Murphy, Jane Russell, Sandra Giles, Diana Dors — and Roscoe Ates!"

Another item about Herb is abstracted from the *Journal of the Society of Motion Picture and Television Engineers*, December, 1958. Announcement is made of the election of Herb to honorary membership in the society. "The citation, prepared by the honorary membership committee under the chairmanship of Deane R. White to accompany the award, stated: Dr. Herbert T. Kalmus, more than any other person, has been the dynamic influence which has brought color pictures to the motion-picture theater. As the founder and guiding hand of the Technicolor Corp. he sought out and developed a commercially practical system of color photography which has supplied the great majority of motion pictures in color over the past 30 years.

"It is interesting to note that just 20 years ago, in this same city, the Society awarded Dr. Kalmus its Progress Medal. In conferring honorary membership to Dr. Herbert T. Kalmus, the Society of Motion Picture and Television Engineers welcomes a true pioneer whose contributions to the motion-picture industry have been unique and whose continued active interest is an inspiration to all who are associated with current motion-picture development."

You should all have received, at least a month before reading these notes, an announcement regarding our 55th reunion in June. If you haven't replied, won't you please do so; and make plans to attend if you possibly can. —EUGENE H. RUSSELL, JR., *Treasurer and Reunion Chairman*, 82 Devonshire Street, Boston 9, Mass. CARLE R. HAYWARD, *President, Acting Secretary, and Reunion Cochairman*, Room 35-304, M.I.T., Cambridge 39, Mass.

1905

Another '05 man has written a book. Through a news release I learn that a new book, *Island Yesterdays* by Norman M. Chivers, will be released on February 15, 1959, by Pageant Press, Inc., price \$3.00. This release gives us the fol-

lowing description and story: "The colorful and interesting life of natives and U. S. citizens during that exciting work-filled era of the early 1900's in the Philippines is brilliantly captured in *Island Yesterdays* by a man who, nearly half a century ago as a young engineer, directed the construction of the Manila Railroad—Norman Chivers, now of of DeBary, Fla.

"Not only is *Island Yesterdays* a fact-filled, valuable work on the history and geography of the Philippines; it is a passionate recollection, and remarkably vivid, too, of this land of the then undeveloped East. Island after island, village after village come to life in this skillful narrative, while with each passing page the interest mounts, as the author avoids the dry-as-dust substance of the ordinary geography text.

"The story of the rail lines—much like the story of the East—is all the more absorbing in the face of the tremendous odds faced by construction crews. Told descriptively rather than technically, modestly rather than dramatically, this is true drama. The author brings the reader back to those days when a small but determined and ingenious band of men conquered terrain and carved out a future for the Philippine Islands.

"With his work on the railroad done, and with his heart still in the Philippines, Mr. Chivers turned to the Bureau of Navigation and a job of directing maintenance of the islands' network of coastal lighthouse stations. His tour of duty in the lighthouse service was rich in adventure and discovery—including some breath-taking bouts with tropical storms in the treacherous island seas and a brief visit to a leper colony.

"Mr. Chivers, a graduate of the University of Chicago (1902) and Massachusetts Institute of Technology (1905), where he received his engineering degree, was employed by the Frederick Snare Corp., contracting engineers, of New York City, for some 35 years before retiring in 1955. Upon retiring Mr. Chivers a native of Buffalo, N.Y., and his wife moved to DeBary, Fla. Married since 1919, the Chivers have three married daughters.

"Among the outstanding engineering projects with which Mr. Chivers has been associated are the submarine base at Key West, Fla.; Number Four Dry Dock, Norfolk (Va.) Navy Yard; and the Marine Parkway Bridge, connecting Rockaway and Brooklyn, N.Y."

Along the same lines (engineering) comes a story of Frank M. Carhart. The *Boston Herald* of January 23, 1958, carried an article on the reputation and accomplishments of Jackson and Moreland, Inc., of which firm Frank is president. On January 1, 1959, Frank was made chairman of the board and chairman of the finance committee. A release from his office tells us: "Following a number of engineering assignments throughout the country, he, in 1923, joined Jackson and Moreland as a department manager in charge of work involving rates, finances, and other economic matters for large public utility properties. In 1927 he became a member

of the firm, and in 1930 a general partner. Since January 1, 1956, he has been president of the company. He is a fellow (life) of the American Institute of Electrical Engineers and a member (life) of the American Society of Civil Engineers. His professional licenses include six states in the United States, Nova Scotia, and the National Bureau of Engineering Registration." The newspaper gave the information that Jackson and Moreland International, Inc., had been formed and staffed to develop new engineering opportunities in Latin America.

Course I seems to monopolize the news this month. I promised last month to tell you about a very interesting letter from Willard Simpson, who is apparently very well and very active both in business and outdoor life. Unfortunately, to save space, I have had to condense his letter as follows:

"We had a pretty slow month during November and part of October and the first part of December, but things are picking up slightly now. It seems that the construction business is affected more by conditions in the country than any other business, and they affected it very promptly. We depend upon our business from private owners and private industry and do practically no government work at all. Of course there is lots of government work and lots of highway work going on here, but I haven't made any particular effort to get in with the highway work, although I expect to.

"We are having our usual winter. It is a little colder than usual but too dry to suit me. I have been out on two deer hunts and expect to go on one more during Christmas week. I look forward to getting out in the country and tramping in the woods searching out a good trophy, a good buck trophy with suitable horns.

"I got a very good one on the 22d of November, one of the largest bucks killed in the area where he was killed, and that was in Kerr County in the area northwest of San Antonio. I wish I could send you a frozen chunk of that, but I don't know of any method of getting it to you frozen, and it is risky to allow it to thaw out. Last week I had another hunt, the one I enjoy most, down south of here near the Rio Grande border where the big old rusty bucks roam; however, I didn't have the luck of seeing any. My son was along in the party and he got the largest buck ever killed on this ranch. It had 10 points and weighed 154 pounds dressed. The next day after he got his, I went to the same place he went and we saw a buck come by. My son was with me and was just dogging me to shoot, but I don't shoot at a buck running when he is 225 yards away. I didn't want to scare him completely out of the country thinking that someone might get a shot at him later.

"Incidentally, where we were hunting, the owner of the ranch, which has an acreage of about 12,000 acres, stipulates that you can only take one buck and that buck must have eight points or more. That would be four on each side. That is a good rule because there are too many hunters in the field and most of them are killing the small bucks with three and four and six prongs. It is nice to have the meat and eat it and give it away to your

friends, but venison is pretty hard to cook properly so that it is tender. This year when I went into my deep freeze there was at least 30 pounds of venison left from a buck I killed last year; and while it is still good to eat you would rather eat the one you killed in 1958, so there must be some waste to that." How about someone from one of the other courses breaking their spell of modesty (or lethargy) and sending in "My True Story?"

Harry M. Nabstedt, I, died at his home in Davenport, Iowa, on December 8, 1958, after an extended illness. We are fortunate to have a clipping from a Davenport paper from which I quote: "Mr. Nabstedt served on the Davenport board of education from 1942 to 1948 and was president of the organization for a year. He was president of Davenport Rotary Club in 1949 and of the Sunshine Club in 1947-48. He worked with many other civic groups and was on the City Planning Commission.

"He was born in Davenport and received his early education here. He was graduated by Davenport High School in 1898 and then went to work for his father in the real estate firm of Nabstedt and Pierce. Prior to his experience in the real estate office, one of his chief jobs had been as a newspaper carrier boy for *The Times* in 1892-93.

"Mr. Nabstedt had many tales to tell of his early experiences. He received 75 cents a week for carrying papers and his parents insisted that he deposit some of his earning in the bank. Accordingly, he opened an account with a 10 cent deposit. One of his early recollections was of the flood in Davenport in 1892. The *Times* was located on Front Street then, and the Mississippi was more than lapping at the front door. Young Nabstedt decided to enter by the front anyway, but he fell into the water. He recalled being rescued by a Captain Osborne, who operated a steamboat freight house across from the *Times*.

"After a year in the real estate office, Mr. Nabstedt attended Phillips Exeter Academy in Exeter, Mass., and then the Massachusetts Institute of Technology. He was graduated as a civil engineer with specialization in hydraulic engineering.

"Mr. Nabstedt spent the 26 years of his professional life in the employ of Ambursen Construction Co., of Boston and New York. Besides supervising projects in many other states, he represented the firm in Kansas City and San Francisco. During that 26 years he had designed and supervised the construction of dams, powerhouses, flood control projects, and irrigation works.

"He retired in 1932, and his last job before retirement was a \$4,500,000 dam in Mexico. It consisted of a large dam and powerhouse in lower California and posed many unusual problems. While there he was provided a small army for protection of the project.

"Mr. Nabstedt had always been active in civic affairs. He served as chairman of the area rationing board from its inception in January, 1942, until May, 1945, when he resigned because of his health and pressure of personal affairs. He was a member of the Contemporary Club and St. John's Methodist Church.

"Masonry enlisted his interest for many years, and he served the Masonic Lodges in many offices. He was a 33d degree Mason. He set a record in 1944 by holding four offices in Masonic groups at the same time: he was commander of St. Simon of Cyrene Commandery number 9, Knights Templar; high priest of Davenport chapter, number 16, Royal Arch Masons; master of Fraternal Lodge number 221, A.F. and A.M.; and master of Kadosh of Zarephath Consistory of the Scottish Rite Masons. He later served as worthy patron of Trinity chapter, number 541, Order of the Eastern Star.

"In September of this year he was awarded the designation of Knight of the York Cross of Honor, the highest in the York Rite of Freemasonry.

"Mr. Nabstedt married Myrtle McAninch in Davenport and the couple celebrated their golden wedding anniversary in 1957. Surviving are his wife; a sister, Mrs. L. E. Braydon of Tulsa, Okla.; and a brother, Arthur L. Nabstedt of Hamden, Conn."

Arthur F. Belding, II, died at his home in Amsterdam, Holland, on September 29, 1958. After his last retirement he returned to live in the native land of his wife, and he had written that he was enjoying life there very much. I have always wondered how Art got the nickname "Mouse." Since there are none of the old Sullivan Machinery gang left, perhaps I'll never know.

Since writing the above, I have obtained more detail in regard to Arthur Belding: "Arthur Belding joined the Sullivan Machinery Company when he graduated from M.I.T. in 1905. He spent six years in the Joplin, Mo., lead and zinc mining field selling mining machinery. He then joined our export division in London, England, when our office was opened there in 1911, first as assistant manager and later as manager. There he married and had a daughter, Joan.

"In 1940, after London had been bombed out and business there was at a standstill, he returned to the export headquarters in Michigan City, Ind., as assistant export manager until 1944, when he was put in charge of Sullivan's Washington, D.C., office, still in the export division.

"In 1946 the Sullivan Company was merged into the Joy Manufacturing Company and Arthur retained the management of the Washington office until 1952, when he was given charge of our European business with headquarters in our New York export office.

"In 1955 Arthur retired, after 50 years of service to Sullivan and Joy, and moved to Copenhagen, Denmark, with his wife, Ida, and daughter, Joan. He preferred Copenhagen to New York for many reasons. That was Mrs. Belding's home and they had many friends there. And for a retired man you could live very much better there than in New York on your retirement income. On September 29, 1958, Arthur died in Copenhagen at age 74, after a full and successful life."

Just had a letter from Victor Paquet (home address 4520 View Acres Road, Milwaukie 22, Ore.) which asks in regard to the history of his old pal, Tom Gunn, whom Vic had not heard from since Tom

went to Russia with submarine hush-hush just before World War I. He had little to say about himself except that he is now 80 years old and in sufficiently good health to have a life expectancy of at least 85.

Renshaw Borie, II, died in Philadelphia on July 1, 1958. Albert H. Smith, XIII, died on November 19, 1958. The last address we had was International Harvester Company, Chicago; but mail to that address was many years ago returned marked "removed." No further information is available.—FRED W. GOLDTHWAIT, *Secretary*, Box 123, Center Sandwich, N. H. GILBERT S. TOWER, *Assistant Secretary*, 35 North Main Street, Cohasset, Mass.

1906

As of February 14 a number of letters had arrived but not much news. Jack Norton, V, allowed that in Tryon they had had a cold winter which had cheated him out of a lot of golf but was good for his grapevines! If he is "alive and kicking" he will be on deck in '61; and he and Margaret expect to get to New Hampshire as usual in July. Wish you could start a couple weeks earlier, Jack, and help inaugurate Dr. Stratton as President on Alumni Day, June 15. That goes for you all too, so put a circle around that date and start making plans.

Percy Tillson, VI, was still keeping out of mischief, so he said, at his job with the Pennsylvania General State Authority; but by mid-April they'll be traveling westward. Percy said he has always been told the earth is round, so he decided to test it and perhaps make a contribution to science. Hope they don't find it is FLAT and fall off the rim! Sam Ware, XIII, allowed that he and his wife were still hanging on and in "reasonably" good health. Reminds me of that satire on health entitled "I'm Fine"; and if you haven't chuckled over it, write me for a copy—gratis. Sam was wondering about the 55th (which will be wonderful) and admitted he'd enjoyed the 50th.

Cy Young would appreciate a note or card. The Abe Shermans drove over from Sarasota the latter part of January to see Cy and found he was in the hospital at Ft. Lauderdale, having had a fall and broken his hip. He is probably ambulating by mid-April and at home at 210 South Riverside Drive (P.O. Box 692), Pompano Beach, Fla. George Guernsey, I, had a very serious operation in January but had his rabbit's foot along; he made a fine recovery and was back on the job by mid-February. George has been treasurer of the Dana Hall Schools these many years. As class treasurer I can report that at this point nine of you have sent in class dues: Course VI tops with four; two in course III; one each in I, V, XIII. Folding money still welcome.—EDWARD B. ROWE, *Secretary-Treasurer*, 11 Cushing Road, Wellesley Hills 81, Mass.

1908

The fourth and final dinner meeting of the 1958-59 season will be held at the M.I.T. Faculty Club, 50 Memorial Drive, Cambridge, Mass., on Wednesday, May

6, 1959, at 6:00 P.M. Final plans for our 51st reunion will be talked over. The reunion is to be held at the Melrose Inn, Harwichport, Mass., on the Cape, June 12, 13, and 14. This is where we held our 48th and 49th reunions, and again we are to have the Beach House for our headquarters. George Belcher, our golf expert, and Dick Collins, our gifted pianist, will be on hand even though Edith and Margaret will be at Wellesley on account of their 50th. The Smith brothers of the Melrose Inn have always given us a good time. Plan to come!

Had dinner in Boston with Jimmie Burch late in January. He had been attending several bank meetings in New York and came to Boston to see an uncle who lives in Chestnut Hill. He and Marie plan to be at Harwichport in June. Les and Helen Ellis spent some time at Clearwater, Fla., during March. Les's doctor O.K.'d the trip if they traveled by train but did not favor their driving.

Gregory Dexter writes from Scarsdale, N.Y.: "I compliment you on the news of the Class in the January issue of *The Technology Review*. You had an account of the life of Bill Taylor as a result of his death, and I found it interesting as it had not previously had my attention. I believe it is particularly important as members of our Class pass on to publish a few notes as to the work they did.

"Having retired, I really do not have any important news. My son, Gregory, leaves the Coast Guard in about a week as his enlistment ends; and about a week afterward he will return to the University of Michigan to complete his education. Nancy is in her third year at Simmons College, Boston. Susan is in her first year at the Wharton School of Business, University of Pennsylvania.

"Other than odds and ends for the family and about the place, I helped this last fall to gather some data on the history of the M.I.T. Club of New York. I make an occasional lecture on engineering as a career at high schools in Westchester County. By avoiding any high-pressure work, I get along very well if I take my medicine twice daily."

We are sorry to report the death of Edwin Price on January 11, 1957, at his home in Van Buren, Ark.

Have you done your duty to the Alumni Fund? Don't put it off. H.A.S.N.? —H. LESTON CARTER, *Secretary*, 14 Roslyn Road, Waban 68, Mass. LESLIE B. ELLIS, *Treasurer and Assistant Secretary*, 230 Melrose Street, Melrose 76, Mass.

1909

On Sunday, January 18, we received a telephone call from Sam McCain, I, stating that he was at the New England Baptist Hospital recuperating from an operation. He particularly wanted to know Art Shaw's telephone number. On behalf of the Class we sent him flowers. He wrote us the following: "It was very thoughtful of you to send me the lovely flowers which arrived yesterday (January 20) from the Class of 1909. I appreciate them very much. Art Shaw called this morning and we had a very nice visit. The doctors told me this morning that X-rays which were taken yesterday showed that

everything was O.K. after the operation and that it would be all right for me to leave for home (Syracuse) on Monday. I am looking forward to seeing you in June."

Art stated that he had a very pleasant visit with Sam and that Sam is tentatively planning that his attendance at the 50th reunion in June will synchronize with a post-operative checkup by his surgeon at the Leahy Clinic. Happily, Sam's wife was near him during his stay at the hospital. He has two sons and two daughters and boasts of 16 grandchildren.

Shortly after the visit to Sam, Art and Betty Shaw started on their annual visit to Florida, planning to be back the latter part of April. They are staying at Gulf Ranch, Longboat Key, Sarasota. George, II, and Marcia Wallis also departed about this time for their annual visit to Florida.

We have received notice of the death of Fred(erick) King, II, on January 21 at Whittier, Calif., at the age of 73. He was born in Pittsfield, Mass., and prepared for the Institute at Abington High School. He was a member of the Mechanical Engineering Society and was in the Tech Show chorus two years. He performed his thesis, "An Investigation of Repeated Stress in Locomotive Springs," with W. J. Rountree. He joined Union Carbide in 1909 as an engineer at the Buffalo Laboratory of the Linde Company and rose to the position of chief engineer in 1927. After his retirement in 1948, he was consulting engineer for the company for two years. He is survived by his wife, Frances King of Whittier, Calif., and a daughter, Mrs. W. R. (Viola) Haynsworth of La-Punte, Calif. Fred was past president of Compressed Gas Manufacturers Association. He was active until his retirement in the affairs of many technical societies including the International Acetylene Association, American Society of Mechanical Engineers, and the American Welding Society.

You all will have noted the death on February 13 at Cornish, Maine, of Orville B. Denison, permanent class secretary of 1911. In the November Review we reported that Dennie had become hospitalized and that on behalf of the Class we had sent him a card of sympathy and wishes for an early recovery. Since we have known Dennie since he was a student and he has corresponded with us frequently, often sending us items for our class notes, the notice of his death was that for an old friend. We have written to his widow, Sara, extending the sympathy of the Class as well as our own. — CHESTER L. DAWES, *Secretary*, Pierce Hall, Harvard University, Cambridge 38, Mass. GEORGE E. WALLIS, *Assistant Secretary*, 185 Main Street, Wenham, Massachusetts.

1910

It is with deep sorrow that I have to announce the death of Richard W. Lewis on January 25, 1959, at South Duxbury, Mass., and of Alexander Batsner on September 16, 1958, at Cincinnati, Ohio. The following is from the *Boston Herald*: "Services for Colonel Richard Wheatley Lewis, 71, U.S. Army (retired), will be held Wednesday at 2:00 P.M. at the First

Parish Church, Unitarian. He died Sunday at a Pembroke nursing home.

"Colonel Lewis, who until recently lived in South Duxbury, was born in Florida and was the son of Colonel I. N. Lewis, the developer of the Lewis machine gun. He served with the 1st Division engineers in World War I and with the Office of the Chief of Ordnance in World War II. He was a chemical engineer, a 1910 graduate of M.I.T., and was president and treasurer of the Lewis Asphalt Engineering Corp., New York, until its dissolution in 1930. He was a member of American Ordnance Association, Society of Military Engineers, Reserve Officers Association, the American Legion."

Again, my good correspondent Carroll Benton comes through with notes covering the January 1910 New York luncheon meeting: "Yesterday (January 21) we had our regular monthly luncheon at the M.I.T. Club. We did pretty well, I think, as the following 10 classmates were present: George Magee, Gordon Holbrook, Henry Schleicher, Erford Potter, Ray Jacoby, Fred Dewey, Harold Akerly, Larry Hemmenway, Jim Tripp, and Yours Truly. Carroll Shaw couldn't make it because of cleaning up matters preparatory to a vacation trip to Arizona starting next week. Harold Parsons was tied up on business matters in Westchester, and Al Hague is still in Florida (living most of the time on his boat). A post card received the other day from him was sent from Pompano Beach.

"You will note that among those present yesterday was Harold Akerly, whom most of us hadn't seen since graduation. I knew him right away when he walked into the club. He is in New York to investigate the charges that there has been a waste of 100 million dollars in the New York City school construction program. Needless to say we were all delighted to see him, and he promised to attend future luncheons if possible.

"The last issue of The Technology Review just came and I enjoyed the account of your vacation trip last summer. Many of the places you mentioned have been visited by Ann and myself at one time or another, except possibly Jackson Lake Lodge. We went through Jackson Hole on our way to Jenny Lake in 1952. We would like to get out there again sometime, but I don't know. Like you, we enjoy traveling by car and seeing different places. Last summer we enjoyed our trip to the Maritime Provinces (and to Boothbay Harbor, Maine). In March we hope to get down to Florida for about a month, returning by way of New Orleans."

I met Art Curtis recently. He is looking fine after undergoing an abdominal operation. — HERBERT S. CLEVERDON, *Secretary*, 120 Tremont Street, Boston 8, Mass.

1911

ORVILLE BOARDMAN DENISON
Class Secretary 1909 — 1959
Alumni Association Secretary
1924 — 1928
Died February 13, 1959

On Friday, February 13, 1959, the *Framingham* (Mass.) *News* published the following: "Orville B. Denison, retired executive director of the Framingham Chamber of Commerce, died shortly after seven o'clock this morning in his home, Wellsweep, Cornish, Maine, where he had resided since early last summer.

"He was born in Framingham on October 5, 1890, the son of the late Mr. and Mrs. Nathan N. Denison. He received a degree of bachelor of science in electrical engineering from M.I.T. in 1911. For 12 years after graduation he was with Electric Cable Works and American Steel and Wire Co. of Worcester and Simplex Wire and Cable Co. of Cambridge. He was executive secretary of the M.I.T. Alumni Association from 1924 to 1928 and spent two years in sales engineering with Lamson Co. For the next five years he was proprietor of Douglas Hill Inn at Sebago, Maine. From 1936 to 1942 he was promotion manager of the Bancroft Hotel, Worcester, and convention and publicity bureau manager of the Worcester Chamber of Commerce. The next two years he was in sales engineering with George S. May Co. Appointed as secretary-manager of the Gardner Chamber of Commerce in July, 1944, Mr. Denison had remained in that position until February, 1954, when he accepted appointment to the Framingham Chamber of Commerce.

"In the M.I.T. Alumni Association he had been active. He was permanent secretary of the Class of 1911 and its representative on the Alumni Council. In 1914 and 1915 he was secretary and one of the founders of the Worcester County M.I.T. Alumni Association. He was secretary of the New England Association of Beta Theta Pi from 1918 to 1920 and also a member of the executive committee of the M.I.T. Alumni Association. He was president of the Boston Theta Club from 1920 to 1922 and president of M.I.T. Alumni Association of Western Maine, 1932 to 1933. He was chairman of western Massachusetts M.I.T. Alumni Fund in 1938. From 1940 he was Alumni Fund class agent; and from 1941 to 1946, president of the Worcester County Alumni Association. Mr. Denison was secretary in 1949 and 1950 and president the following year of the Massachusetts Association of Commercial Executives and again president of that organization for the 1953-54 term.

"During his four years in Framingham, he was senior warden of St. Andrew's Episcopal Church and a member of the Rotary Club and the town's committee on industrial development. He was an accomplished pianist. Survivors are his wife, Sara (Dixon) Denison; a daughter, Mrs. Helen Barton of Cornish, Maine; and two sons, Orville, Jr., of Cornish and George of Norwood, Mass.; also eight grandchildren. The funeral will take place Sunday afternoon at two o'clock in St. Andrew's Episcopal Church. Reverend John U. Harris, rector, will officiate. Burial will follow in the family lot in Edgell Grove Cemetery."

Eighteen of his 1911 classmates (Don Stevens, Fred Harrington, Tom Haines, Ernest Batty, Roger Loud, Fred Daniels, Chet Pepper, Chas Linehan, Harold

Shaw, Cleon Johnson, Marshall Comstock, Carl Ell, O. B. Clark, Harold Lord, Gordon Glazier, O. W. Stewart, Roy MacPherson, and Jack Herlihy) attended the funeral services in a body. After the services, a number of the classmates and wives accepted Roy MacPherson's invitation to visit his home, where Dennie's family were house guests. Ina served refreshments and we had a chance to chat with Sara and the family. Sara had requested that in place of flowers, gifts be made to St. Andrew's Church for a permanent memorial to Dennie. When suggestions are received from the minister and a decision made, the Class will participate. More about this later. Carl Richmond, Henry Dolliver, and I talked with Jim Duffy's brother at the funeral home Saturday.

During the last days of Dennie's illness our president, Don Stevens, was in close touch with the Denison family. And on receipt of the bad news he telephoned the following tribute for the class notes: "Best known and beloved man in Class Alumni—Outstanding record of having class notes in every issue of *The Review* since graduation—Five year reunions so well planned and directed there was never a dull moment—Annual meetings in Boston and New York eagerly anticipated—Gave unstintingly of time to all Alumni activities—Ability at piano used over and over again to help many Technology affairs—Now, loving memory to Dennie and sympathy to Sara and family."

The following notes (started by Dennie and finished by Jack) were completed when our loss became known. Your President and Assistant Secretary feel they should be published in this issue of *The Review* to keep the Denison tradition unbroken to the completion of his record. Until further notice, please write Jack!

When you suddenly receive a notice that the editor of your favorite magazine for which you have been a contributor for years and years is about to leave, it is indeed a shock. Such is the case, B. Dudley, with this notice of January 30. You have been so enthusiastic and wholehearted in your co-operation with the class secretaries that we will miss you terribly. However, you have trained your staff so well that I feel sure the members will take up a great deal of the slack.

That you will improve yourself and increase your opportunities of service to M.I.T. as assistant to the director of the M.I.T. Laboratory in Lexington will be very fine for you and all of us, and we glory in it for you. Knowing Publisher Lobdell's remarkable judgment, we feel sure that Mr. Volta Torrey, who succeeded you on February 1 as editor, will do a fine job; and we look forward to working with him as we did with you.

Another particularly happy announcement from President J. J. Wilson '29 of the Alumni Association informs us that the inauguration of our fellow Alumnus Dr. Julius A. Stratton '23, who is now serving as President of M.I.T., will take place on the morning of Alumni Day, June 15, 1959. This will make this Alumni Day outstanding as no other one, and all of us certainly will make an effort to be present. Remember the date: Monday, June 15.

This has really been quite an effort on my part, and now I am taking advantage of Assistant Secretary Jack Herlihy's kind offer to do the rest of the notes. Thanks, Jack. . . .

From a Framingham, Mass., newspaper dated January 12: "John A. Bigelow, who designed the Framingham Masonic Temple, among a number of buildings, will retire as city engineer of Marlboro at the end of this month, after 21 years' service. He will reach the retirement age of 70 years on January 29. A graduate of M.I.T. in 1911, he has been a practicing architect since that time." It seems a long time since we have had Johnnie at one of our 7-come-'11 dinners in Boston. We miss you, John. Hope you enjoy your retirement.

A letter from Phil Caldwell, I, to Dennie reports: "I retired as of December 31, 1958. Bobby and I are spending the winter here in Nokomis, Fla. We love it. Harry and Grace Tisdale dropped in to see us. They live about 65 miles from us at Fort Myers Beach. They built a house there and are permanently and happily located. Do you know any '11 men who are down on the west coast of Florida? If all goes well Bobby and I plan to make an extended auto trip in May to the West Coast. Hope to see Billy Warner in Nowata, Okla., next September. Bobby and I will be at our place in North Sandwich, N.H., and will certainly drive over to see you." Phil's address at Nokomis is Route 1, Box 100.

Harry Tisdale, V (and Grace), also wrote the Denisons as follows: "I finished up a plank walk-out dock last November 21. I have over 31 feet of beach at low tide, so I had to go out to 41 feet to reach deep water. I had a contractor set the pilings and I did most of the other work. Now my next project is to build a floating dock (four feet by four feet), then rig up a windlass to haul a boat out of water when not in use. Then I have to get the boat. Meanwhile, the fishing has been good out in the Bay. My best so far are a six-pound redfish and a four-pound snook—both good eating. Had a letter from Rose Harrington, and she is coming down to Ft. Lauderdale February 15 to stay six weeks. We hope to see her over here before she returns north. The change of scenery will do her a lot of good and there is no snow; she may hit some on her way down, according to the reports. For the last 10 weeks, Grace and I have been attending a class in small boat handling and piloting and navigation. Grace was not too interested but she went along for the ride. Last Sunday, I went up to Ft. Myers for the final exam. It took me three hours to try to answer all the questions. Those on navigation were tricky. The chart they gave us was the area around Buzzards Bay. The course is given by the Power Squadron of the U.S. Coast Guard. If one passes this first exam, he can expect an invitation to join the Power Squadron and enroll for the more advanced courses. Me—with no boat! However, it was lots of fun while it lasted and the basic information may come in handy if I get stuck in the Bay in thick fog someday."

Ed Kruckemeyer, IV, writes: "While I have not been sick or incapacitated, the

doctor has told me to ease up a bit; I have not done so. Even on our trip to Europe last July and August I vacationed at quite a pace—to Belgium and the Fair, Holland, Germany, Austria, Switzerland, Spain, and Portugal. We never go to Europe to take it easy—too much to see and to do! Now we are hoping that our son (not grandson), Ken, will be admitted at M.I.T. this fall in the freshman class. At the time of our 1952 reunion he fell in love (that is with the Institute) and has been that way ever since—except even more so after two subsequent visits and a comparison with other colleges. It is up to him now for decision and for meeting requirements successfully. It is interesting to note that the 100 years of M.I.T. and the 50 years of '11 classmates are coincident. With Ollie Bards '21 at 40 years at the same Alumni celebration in 1961 and if Ken can be a student at the Institute, our family will be doing real well—so we are looking forward to that approaching occasion hopefully."

The following address changes have been received: Luis de Florez, II, 200 Sylvan Avenue, Coytersville, N.J.; Allison H. Whorf, III, Box 48, West Hampstead, N.H.; Milton E. Hayman, IV, 1216 Farmington Avenue, West Hartford 7, Conn.; and Dr. Frank F. Rupert, V, 1226 Tennessee Avenue, Pittsburgh 16, Pa. On Frank Rupert's notice we have a memo "Retired." How about some more details, Frank?—ORVILLE B. DENISON, *Secretary*. JOHN A. HERLIHY, *Assistant Secretary*, 588 Riverside Avenue, Medford 55, Mass.

1912

Word has just been received of the death of Lewis Davis, V, who passed away on February 7. He has been living at 62 Commodore Road, Worcester, Mass., and it is hoped that the details of his recent activities prior to his death can be obtained.

Page Golsan has been good enough to give us news regarding Los Angeles men, which follows: Page retired from Ford, Bacon, and Davis in 1956 and spent five months traveling in Europe. He then settled down again and is as busy as ever with three companies in which he is a director: Servomechanisms, Inc. (electronics); Western Precipitation Corp. (air and gas cleaning equipment); and Sprague Engineering Co. (aircraft hydraulic systems).

Bert Calvin, VI, is top man with the William Simpson Construction Co., building many of the Los Angeles skyscrapers and snappy department stores. Bert is hale and hearty and has just purchased a new home on Old Mill Road.

Bill Lynch, II, retired as western manager of the Aluminum Company a year or more ago. He is also hale and hearty, spending about one half his time traveling in Europe and the other half golfing at the Los Angeles Country Club.

Henry Babcock, II, the country's outstanding authority on real estate, has a large consulting practice. He recently has been engaged in the vast Bunker Hill project which will modernize a big section of downtown Los Angeles.

Marcus M. Cory, I, is apparently living the life of Riley on his yacht in San Diego Harbor. He spends some time managing apartments and mortgages which he holds on downtown realty. — **FREDERICK J. SHEPARD, JR., Secretary**, 31 Chestnut Street, Boston 8, Mass., **C. BOLMER VAUGHAN, Assistant Secretary**, 455 West 34th Street, New York 1, N.Y.

1914

If any '14 classmate does not know that our 45th reunion is to be held at the Publick House, Sturbridge, Mass., June 12 through 14, please write your Secretary for the latest bulletins.

First there is a letter from Gilbert Wagner telling that again he will be on hand. Wagner is our class lightning rod expert ready to protect any '14 man's property from the "Red Farm Barn" to the Empire State tower. Unfortunately, Gil writes that his wife died in September, 1957, after 41 years of happily married life. Our consolations are extended to Gil.

Our class auto expert, Dean Fales, calls attention to another classmate, Ray Dinsmore, who is vice-president of Goodyear Tire and Rubber Company and has developed a new tire which rides softer, quieter, and freer from vibration than any other tire. Free samples would be very welcome. Let us talk to him about it at the reunion.

In the recent columns the travels of Bill McPherrin have been told. Now we find that he has included a Mexican trip by auto including visits to Mexico City and Acapulco, with a stop at Houston, Texas, to see our classmate Jim Reber.

Our class president Charlie Fiske has been hiding an article from the *Bath* (Maine) *Daily Times* telling how his wife and he have converted into a wonderful home a former pre-Revolutionary War farmhouse. The conversion has been so unique that the house was opened for public inspection, with the proceeds benefitting the Bath Memorial Hospital.

Phil Covitt writes that he expects to attend the reunion. He really is enthusiastic that he has a son who graduated from the Institute in the Class of 1941. His son is with the Bell Telephone Laboratories and did much research work on the now famous DEW line.

A word from Gardner Derry telling that he will be present at the reunion includes word that he and his wife went to visit their daughter in Raleigh, N.C., and were welcomed there by 10.6 inches of snow, which is more than has fallen in Cambridge until mid-February. Like many other '14 men, Derry has written: "Glad you have not planned for any sports at our reunion."

Clarence Smith — who also plans to attend the reunion — writes that he retired at the year's end after 34 years with the Kerite Company; during 22 of these years he was plant manager. Smith has been active, also, for many years in municipal affairs of his home city, Ansonia, Conn.

Hank Merrill finds that conflict of events will not permit him to attend our reunion. He is now living in retirement at Christian Hill, R.F.D. #1, Milford, N.H. Classmates will recall that he has spent

most of his years since leaving M.I.T. with the Standard Vacuum Oil Company in Shanghai.

Rudy Zecha writes that he plans to attend the reunion. He retired in 1957 from the American Steel and Wire Company of Worcester. With great regret it is learned that his wife died last June of a heart attack.

Of course '14 men expect that Dinny Chatfield will attend the reunion. But not realizing that this reunion is our 45th, Dinny went out skating on last New Year's eve, took a spill, and broke his wrist. Of all persons, Dinny broke his wrist on a New Year's celebration! Dinny has made several visits to George Perley, who has spent long sessions in a Long Island hospital. George is home again and well on the road to recovery.

Norman MacLeod will expect to keep up his record of never missing a reunion. He is back in politics again and was elected state representative from his own town of Charlestown, R.I. Norm has always taken an active interest in Rhode Island affairs as well as the National Association of Manufacturers. — **C. P. FISKE, President**, Cold Spring Farm, Bath, Maine. **H. B. RICHMOND, Secretary**, 100 Memorial Drive, Cambridge 42, Mass. **H. A. AFFEL, Assistant Secretary**, R.F.D. 2, Oakland, Maine.

1915

Have you paid your class dues? What a Class! On January 30 at the Chemists Club, New York, 27 classmates and their guests gathered for another "when good fellows get together" dinner. It's a great tribute to the loyalty and interests of these fellows: Larry Bailey, Dick Bailey, Bill Brackett, Bill Campbell, Alton Cook, Sam Eisenberg, Ralph Hart, Larry Landers, Azel Mack, Frank Murphy, Ben Neal, Stanley Osborn, Wally Pike, Gil Peakes, Larry Quirk, Pirate Rooney, Sol Schneider, Frank Scully, Bill Spencer, Vernon Stewart, Bur Swain, Ray Walcott, Ralph Waterman, Ed Whiting, Chris Wolfe. Our guests were particularly welcome — Stan Osborn's brother Frank, 1911, and Larry Bailey's son Bill, 1941.

Bur Swain and Larry Landers did the work and deserve our thanks and praise for putting on such a fine party. Ralph Waterman, back from England, was attending his first class dinner and won the "long time — no see" award; a pleasure to have you with us, Ralph, and do come again. Ben Neal from Lockport, N.Y., and Bill Spencer from Baltimore won "long distance" distinction. Ed Whiting and Sol Schneider came from Philadelphia and Larry Bailey, now retired and living in South Duxbury, Mass., went down with the Boston gang. Pirate Rooney opened the dinner with a "we are happy" cheer and later closed the evening by ejecting a dozen guys from our rooms upstairs in the club, around the early morning hours, after a nostalgic talk session. Ben Neal gave a heart-throbbing and inspiring talk about our 50th capital gift fund. Ralph Hart took an active part in the discussion; and in his quiet and modest way, after the meeting, he gave me a sizable check for Ben's fund. Many thanks, Ralph. "Go ye and do likewise."

Vern Stewart, X, was another oldtimer retrieved back into the fold. Many retirements reduced the attendance, but it's comforting to see the boys enjoying their early old age. Hank Marion, who did so much work on the previous New York class dinners, wrote from Clearwater, Fla.: "I certainly wish I could be with all you fellows Friday night. I know it will be a grand evening. Please give my regards to everybody, and I will be thinking of you at the time. Virginia and I have been here since just before Christmas and plan to be here till about the end of February, then to go out to Arizona for a month or so, then work our way homeward by easy stages. Will probably be back in Plainfield, N.J., early in May. We have been fine and are enjoying retirement very much. While here, we are only about 15 minutes from our son's home in Harbor Bluffs, which makes it very nice to be able to be with the grandchildren a lot. Good luck, and I'll be seeing you." Shortly after the New York dinner Larry Quirk, who came down from Middletown, Conn., left on a cruise; he later sent us a card from San Juan, Puerto Rico. Ah, me!

Do you all know that Stanley Osborn is commissioner of health for the state of Connecticut, with offices in Hartford? On February 1, Phil Alger retired from General Electric Company, Schenectady, and the tributes paid him will make interesting notes for next month. He sent me a cute Christmas poem about plans for Mrs. Alger and his trip to England and Scotland, and we hope he writes us from there. He wrote to Bur: "I am sorry to say I will not attend the 1915 dinner this year, because the various to-dos associated with my February 1 retirement from G.E. will keep me here through Saturday. However, I'll look forward to being with you in 1960. Meanwhile, my Christmas card enclosed tells something of our immediate plans. Next fall I will be a professor of sorts at Rensselaer Polytechnic Institute in nearby Troy. While over the water, I expect to visit numerous universities, as well as see the sights."

Joe Livermore sent greetings from 48 Ravelston Garden, Edinburgh 4, Scotland, where he is on business. Cliff Sifton, retired, sent regards. Harold Edgerton wrote from 5806 Surrey Street, Chevy Chase, Md. I can't feel too sorry for Jim Tobey, writing from West Palm Beach: "Sorry but I am suffering on the uranium, formerly gold, coast in Florida, and the pirates who flourish here (and how!) won't release me." Too bad, eh! Jerry Coldwell, always a regular at the New York dinners, wrote: "Due to an unexpected change in my schedule I find that I shall be unable to attend the 1915 dinner at the Chemists Club on the 30th. Sorry I can't make it as I haven't missed one for some years. Please give my regards to the group. I retired the first part of this month but have been quite busy since that time. I am a trustee of the Roosevelt Hospital in New York, on the executive committee and chairman of the building committee; and as we are about to place steel orders for an \$8- to \$10-million new building, time seems to be a bit short. Verta and I leave for Naples, Fla., on February 7 and will be away until the middle of April."

Hope the weather down there is better than it was last year." Henry Daley, celebrating his retirement, wrote: "Sorry, but I'll have to pass up the class dinner in New York on January 30. It is just my tough luck to have the date conflict with my retirement party here in Philadelphia, as I am joining the ranks of the unemployed on January 31. My best regards to all the gang and regrets I can't make it this year. Hope to see you and so many of my friends at Alumni Day in June."

Otto Hilbert wrote: "We are enjoying retirement and so far have had no difficulty keeping occupied and find it pleasant to do just what comes to mind. I have prospects of doing some part-time consulting work upon our return from Florida. While I know that state well, we have always gone by train. This time we'll drive and go where fancy takes us. On our way home we expect to go to New Orleans. I am sorry to miss the New York dinner, but say hello to all the gang for me. Regards to Frances and you." Ed Sullivan and his sister, Anne, are resting at Fort Lauderdale, preparatory, probably, to another long cruise. They were on the *Coronia* round-the-world trip in 1958. We want these absent classmates to know we certainly did miss them and warmly appreciate their interest in writing.

Just before the dinner Ben Neal wrote: "What do you mean 'No speeches'? There is no use of my going to New York if I can't inflict a speech on you; it's the only crowd in the world that will tolerate me, and if I can't use my skill on you, who can I use it on? However, January 30 is my birthday. And I don't know why in the devil you always have to pull this meeting on my birthday, when if I stayed home I would be amply provided with presents; and nobody at New York does a thing about it! God willing, will see you, and until then the best of luck." In reward for this sacrifice, the boys presented Ben with a pretty birthday cake, aglow with lighted candles. (Two chaps fainted from the heat.) And it really made good eatin'. It was a nice tribute to Ben, who is doing such a monumental job for 1915 and M.I.T. on our 50th fund.

With a generous check to Ben, Maurice Brandt wrote: "I am glad Ben Neal has recovered. We all have to slow down to avoid these surgery jobs. But they occur, regardless. Here's to 1915 in 1960. It's good for us to get together when we can." Maurice and his wife were recovering from a horrible and serious automobile accident near Charlotte, N.C. Good luck and good cheer to them. If you haven't paid your Class dues — not much, not often — just stick your check in the postage paid envelope. Many thanks.

Mrs. Edith Apted King (Howard's widow) was married to Mr. Walter A. Manss on February 7, in the Cathedral Church of Saint John, Wilmington, Del. Best wishes from our Class to them. All classmates with their families and guests are cordially invited to the annual class cocktail party, Monday afternoon at four o'clock, June 15, at the M.I.T. Faculty Club, 50 Memorial Drive, Cambridge. (There will be neither charge nor collection for this! It's FREE). This is Alumni Day; and whether you go to the Institute doings or not, be sure to go to YOUR

class cocktail party. Barbara Thomas and Al Sampson, again, will run this; so you know it will be very good. See you there! In answer to my letter to Ernie Loveland, Marion, Mass., to write us something about his interesting trip to Africa and his planned trip to Tasmania, he wrote: "I was asked to accept and did accept an offer to go to Tasmania to start a plant for a new company as vice-president in charge of production and a new member of the board of directors, to take charge of preliminary research, erection, and operation of a pilot plant and then develop a commercial plant — to stay about four years, and then, if I wished, to turn it over in operating condition to a successor. This project is still alive, although early this year they said they would be ready for me in July if my company would release me as soon as that. They now have run into unexpected difficulties and can't say how much longer it will take them. Meantime, I have been retired in January and don't know what to do with myself. The oysters, quahogs, and clams around here (Ernie lives on the Cape) and later the fish are going to catch it! I may have to eat a lot of that stuff to keep my grocery bill down. I have contacted a few people, telling them that I am available for various temporary start-up jobs. One company spoke of the possibility of sending me to Honduras in February for a short job, installing and starting a new filter.

"As to the trip abroad last year, lots of people go abroad. I spent six weeks in Brest, France, starting up a new plant, which I had more or less designed. Then a few days each in Spain, Portugal, and Casablanca, Morocco, visiting people there who gathered and sold seaweed to us. I had an interesting trip and occasionally had to laugh at myself. Casablanca was most interesting. The contrast between the veiled Arabian women and the bikini-clad, almost unclad French women, at the swimming pools, was tremendous, and I could hardly take my eyes off either of them. [Imagine this from Ernie at his age!]" Ernie could probably elaborate this with some pretty colorful stories.

It's sad to report the passing of Dennie, popularly known to all M.I.T. men, for Orville B. Denison died February 13 at his home in Cornish, Maine. He graduated in 1911 and was always active in M.I.T. and his class affairs and long was an officer of the Alumni Association. All M.I.T. men have lost a fine old friend. The sympathy of our Class has been sent to his family. — AZEL W. MACK, SECRETARY, 100 Memorial Drive, Cambridge 42, Mass.

1916

It happened just the way you'd expect. The story comes under the caption, "Retired Executive Re-enters Business." And there's a good picture of him right under the caption. Yep, it's Ted Jewett. He retired last July as a vice-president of Spencer Kellogg and Sons, Inc.; but at the turn of the year he started on a new business career, joining the International Railway Car Leasing Co. and the Morrison Plan, Inc., as a V.P. As the paper puts it: "I'm going back to work," Mr. Jewett said as he ended his retirement.

I've loafed for six months and that's long enough." Mr. Jewett also continues to devote much of his time to civic interests. He is president of the Buffalo General Hospital, chairman of a new Buffalo Chamber of Commerce industrial development committee, and head of the Albright Art Gallery building committee. The International Railway Car Leasing and Morrison Plan companies he joined today are affiliates of the Morrison Railway Supply Corp. of Buffalo, headed by Raymond L. Morrison, Sr. International Railway Car Leasing reconditions freight cars and leases them to railroads all over the country. Morrison Plan leases maintenance and heavy equipment to railroads and construction contractors." Ted is well up on our incomplete list of grandparents (sixth, to be exact) with a total of 11 grandchildren, 7 boys and 4 girls, ages 3 to 14.

Gil Gaus, in answer to a repeat request for news, says who cares that he has been selling air compressors and pumps for 21 years for the Gardner-Denver Co. Says he has a little over a year more to go before retiring, but not until then will he give us a life history. It's a promise, Gil.

Leonard Best wrote in January that he and Ruth were about to sail to San Francisco on the *S.S. President Monroe*. Reports having six grandchildren plus expectations, also that he's trying to organize a building fund for Calvary Episcopal in Summit, N.J., adding: "We can use about four hundred thousand. Brother, can you spare a dime?" We know that Leonard has been trying to get the New Jersey Highway Dept. to do a little basic planning and has made specific proposals for improving and revitalizing Route 22 (whose hazards scare most of us New Jerseyites), all in accord with suggestions made at a public hearing in Springfield last May. His arguments are telling — we expect the solution of the traffic problem will be that much better because of his hard work in this area.

Rudolf Gruber speaks of enjoying a recent transcontinental drive, the fourth since he got his '55 Buick which runs "like a clock." A letter from Berkeley came in time for inclusion in the current notes. He says in part: "Your secretarial S.O.S. reached me here in sunny Berkeley. We left our home in Colonia December 29 and motored across the continent in leisurely fashion by the southern route — Natchez, Austin, El Paso, Phoenix, Palm Springs, Santa Monica, and on "Cabrillo Trail" (i.e. State #1) along the Pacific Coast to San Francisco and Berkeley (where we have had family living for many years). I must say that every time I cross the U.S., I fall more in love with my adopted country (this is my 42d year of citizenship). We had remarkable luck with the weather — only one and one-half rainy days en route. I did some new things, too: e.g., from Palm Springs to the Coast by Highway 74 through the San Bernardino and Cleveland Parks (5,000 foot pass) to Lake Elsinore and San Juan Capistrano. The next novelty — incredibly beautiful though highly adventurous — was the trip from Morro Bay to Monterey (passing the San Simeon Hearst ranch). In Carmel we ran into the annual Bing Crosby-Bob Hope golf tournament

at Pebble Beach; Bob Wilson ought to see this sometime! Another tour I can recommend to any touring enthusiasts among my classmates is a round trip from San Francisco to the redwood empire. We went north to Fort Bragg, on the Seashore Highway, then to Eureka visiting Prairie Creek State Park, and returned to Berkeley on 101 through innumerable redwood (Sequoia) groves and over the new San Rafael — Richmond Bridge. So — this is my story and I *don't* work for Thomas Cook." Just as Francis Stern's travel accounts in Europe were helpful to Bob Wilson last year, we hope this account of Rudolf's will be helpful to some of our travel-West tourists.

Since October Joel Connolly has been back in Formosa, after a trip around the world. He and his wife Virginia started on what was intended to be a trip around the world for both of them, with home leave in the U.S.A. However, because of the Quemoy fighting, his wife was not permitted to return when he did. The ban on travel by dependents to Formosa has been rescinded; and as this is written (February) she is in Kansas City and is making arrangements to go over. Let Joel go on: "We have now lived in Taipei longer than any other place except Boston, where we grew up, and Chicago. It is nearly four years since we came here from Manila. The most interesting place visited on this latest trip was Africa. We traveled south along the east coast from Aden, at the southern end of the Red Sea, across Ethiopia, Kenya, Tanganyika, and Rhodesia to South Africa. Our only stop of importance on this leg was in Nairobi, Kenya, where we got some good pictures of lions, zebras, giraffes, and other wild animals in their natural habitat. Near Pretoria, a native African village, Mapoch, was visited. Here the women still wear numerous rings of metal around their necks, arms, and legs. In a gold mine in Johannesburg, we went 6,300 feet below the surface to see miners removing ore. At the equator near Nairobi it was surprisingly cool, but this was due to the high altitude.

"On the next leg we flew over Victoria Falls of the Zambezi River and landed at Léopoldville, Belgian Congo. A ferry took us to Brazzaville, French Equatorial Africa, across the river from Leopoldville. These cities, both capitals of a large area, are very unlike. Since we were there, news reports have told of riots in Leopoldville. The native market with women wearing their hair in all kinds of funny hairdos, many with tattooed faces, was very photogenic. After crossing the Sahara Desert and the Mediterranean Sea, we had a few delightful days in south-west Europe (Italy, France, Spain and Portugal). On my way back to Taipei, I had three weeks of temporary duty in Manila in connection with a conference of I.C.A. (International Co-operation Administration of the U.S. State Dept.) and W.H.O. (World Health Organization) officials who are engaged in public health work in the Near East, Middle East, and Far East. Of course I visited M.I.T. while in the U.S. That goes without saying. It surely looks good!" Joel can be addressed M.S. M./C. A.P.O. 63, San Francisco, Calif., with a seven cent air mail stamp.

When you write, send him the front page of your newspaper—up-to-date news is very welcome.

Jap Carr seems to have some sort of a second alma mater setup with the Harvard Business School and is now talking about a 10th reunion. What it's all about we are not quite certain, though we suspect it has something to do with tennis on the side — perhaps free tennis courts. This is the way he puts it: "I have a job for my Harvard Business School group. We are holding a 10th reunion next June in Cambridge, and I'm general chairman for it and busy with plans to make it a big one. The average age is 53 now; quite a few won't make the 20th and 25th, so we are going all out for this one. Reminds me of our 40th reunion. Now I'm trying to take care of myself, hoping to make our own 45th and 50th. We have our first grandchild, a daughter born at Fort Bragg to our older son, who is just completing a three-year enlistment there. Then he is going to settle in Florida and I may become semi-active in some business with him there. Our younger son has three years to go on a four-year Navy hitch and is on a destroyer in the Pacific, so we don't expect to see much of him for three years. With the help of contact lenses I have confounded the eye doctors by continuing to play tennis and just missed getting into the finals of the Buck Hill Falls doubles this past summer, losing a tough 11-9 third set to a couple of 26-year-old youngsters. Last winter I also lost a hard one in the Palm Beach Bath and Tennis Club tournament with Johnny Van Ryn, the old Davis Cupper, as one of my opponents. Needless to say I pick very good partners; but even so it was fun to be able to play in that league. We leave soon for our usual sojourn in Florida and hope any '16 classmates getting near Palm Beach will look me up in the phone book. For golfers I'm sure I can arrange a game, even though I can't play along with them. Address there: 260 Pendleton Avenue, Palm Beach. I see American Telephone and Telegraph felt in spite of your retirement (or to celebrate it) they could at least split the stock and increase that good old \$9.00 dividend. Welcome to the ranks of retired '16 men!"

Back in January, Jim Evans was right pleased to announce his success in arranging for Joe Barker to be the guest speaker at the 54th annual dinner of the men of St. Paul's Episcopal Church in Paterson, N.J. Joe (or Dr. Barker, as the papers of course had it) spoke on "Citizens and Politics"; guests of honor included the Right Reverend Donald MacAdie, D.D., Suffern Bishop of the Protestant Episcopal Diocese of Newark; Mayor Edward O'Byrne; and Stewart Warner, President of the Paterson Chamber of Commerce. Speaking further of Joe and January, the vestry of the Parish of Trinity Church in the city of New York elected him as churchwarden on the 12th. A news item says; "Trinity Church, established in 1697 at the head of Wall Street, is the Mother church of Episcopalianism in the Diocese of New York. It was endowed by King Charles and Queen Anne by the gift of the King's and Queen's farms, which constituted land in the very heart of New York. Over the

260 years Trinity has assisted by original endowment gifts in the establishment of the Diocese of New York; three Episcopal parishes in New York City; Columbia University; Trinity College in Hartford; Hobart College in Geneva; St. Luke's Trinity, and Trinity-Pawling Schools. In so doing, Trinity has granted away more than half the original endowment property."

Also in January Joe retired as chairman of the board of Research Corp. He has had such a distinguished and colorful career, it is hopeless to try to make a complete account of his activities. He has received over a dozen honorary doctorates. As a holder of bachelor's and master's degrees in electrical engineering, he had the distinction of being the president of the American Society of Mechanical Engineers in 1957. Quoting from some of the recent incomplete newspaper accounts we read: "Mr. Barker is [was then — sec.] chairman of the board of Research Corp. of New York City and chairman of the school planning committee of the Board of Education of New Rochelle. He is a past president of the A.S.M.E., a past president of the Society of the Sigma Xi, of the Scientific Research Society of America, and of the Engineers' Joint Council. From 1916-25 he served in the Coast Artillery Corps of the regular Army, rising from second lieutenant to lieutenant colonel. During World War II he was special assistant to the Secretary of the Navy charged with all policy for education and training, for which he was awarded the Navy Distinguished Civilian Service Medal. He has served as a vestryman of Trinity Church for over 20 years."

Another news item notes: "In the field of higher education Dr. Barker served for four years as a professor of electrical engineering at M.I.T. and two years as professor and department head at Lehigh University. For 16 years thereafter he was dean of the engineering faculty of Columbia University. . . . In the executive and administrative field he holds directorates on Grand Central Branch Chase National Bank, New York; the National Malleable and Steel Coatings Co., Cleveland; Ohio State University Research Foundation, Columbus, Ohio; National Association of Manufacturers; Cottrell-Research Corp; and the Research Corp. He was chairman of the committee on research, N.A.M., 1956-58, and of the "People to People" program on scientists and engineers; chairman of the advisory council of the Patent Trade Mark and Copyright Foundation of George Washington University, and is a trustee of the Thomas Alva Edison Foundation, Inc."

Nice going, Joe! This is not a very orderly presentation, but it gives an idea of the many things Joe's been doing. We've heard rumors that, now he really has retired, he's getting into some new unretiring venture; and we're inclined to bet it's so.

We have a picture of Frank Bucknam which appeared in the December issue of the *Engineering Division News* published by the Engineering Division of Factory Mutual. What's the story? Retirement on December 31! Frank was standards engineer in the Chicago district office at the

time of his retirement. He reminisces: "After graduation, my first job was working for the Pennsylvania Railroad in Ohio laying out spirals on curves. During World War I, I enlisted in a railroad regiment; and from May, 1917, until April, 1919, my nickname was 'Petit Corporal.' I received my basic training at the race track in Salem, N.H., and sailed for France in July, 1917." His career with Factory Mutual started in 1919, and in 1925 he helped open up the new Chicago office. His reminiscing continues: "During those early years of Middle West inspections, most of the trips were sleeper jumps. One was unusual: from Oklahoma City, Okla., to Fort Smith, Ark., on a Saturday night. The ticket agent informed me a week end round trip was cheaper than one way, and continued to state the price of a Pullman was only \$1.00. Then I discovered the awful truth: the sleeping car was half sleeper (very dirty) and half coach, and on the end of a freight train! Although 'on the road' a considerable part of the time, my wife and I agree that the last 33 years living in Western Springs and associated with the Chicago E.D. have been good ones. I expect to continue my hobbies of bridge, bowling, and gardening. . . fruits and vegetables (you can't eat flowers!)." During their vacation, the Bucknams bought a new home in Auburn, Calif. (110 miles from Reno, Nev., where their daughter, Jeanne, and her husband, and two children live) and planned to move out to "God's Country" in January. Their son, Ralph, who is employed at the Argonne Laboratories, will remain in the Chicago vicinity, spending vacations with the rest of the family.

Harold Mills, a near neighbor in Mountain Lakes, came across with a good story when my mailbag was in need of it. His account goes like this: "Our hard-working Secretary has been prodding me for a report; and although I haven't anything of outstanding interest to report, I will ramble on a bit. Time passes so quickly that it doesn't seem to be six years ago since I retired. The reason for this is that my wife and I have many hobbies which keep us busy. I have resolutely turned down a couple of offers to get me back into harness. Two of our three children are married. Two daughters live in California and give us a good excuse to go west occasionally. Our son lives nearby with four children. It is interesting to observe how the minds of one's grandchildren expand from day to day. We didn't have as much time in our day to observe the same thing in our own children.

"My interest in the reproduction of high fidelity music in the home is a strong as ever. From kits, I have assembled many electrical networks and units of electronic laboratory equipment. Stereo high fidelity has arrived and the production of monophonic records of classical music will soon be a thing of the past. I have assembled the two separated sound channels with their associated preamplifiers and amplifiers, which are required, and am about to procure one of the many now-available good pickups for stereo disk playing. It is hoped that the Federal Communications Commission will soon make a decision on the type of F.M. multiplex which it is to

approve for radio stereo transmission. Many people are impatiently waiting for this decision.

"We plan to make another camping and exploring trip to the Southwest this spring. We generally take two months for such a trip. As in previous trips we hope to visit some of the less accessible, and less well-known places of historical and scenic interest, some of which require conveyance by the trusty old mule. On the last trip I rode a mule down into the Grand Canyon, staying over night at Phantom Ranch. Some trip for an old fellow like me! However we (the mule and I) got along fine, as both of us headed in the same direction on the whole trip. There are three rather inaccessible Indian cliff dwellings in the back of Monument Valley which we would like to visit this time.

"We have become interested recently in a new hobby, genealogy! It is said you must arrive at a certain state of senile decay before you develop an interest in genealogy. We have arrived. Neither my wife nor I have uncovered any horse thieves or other important personages in our lines, but we are still hoping. First, one hurriedly pumps the still living old people dry of all the pertinent ancestral knowledge, hurriedly because they may not be here tomorrow or the day after. Then one works around in the old cemeteries; peruses old church records of births, marriages, and deaths, the old town 'vital records' books which go up to 1850, the old voting lists, old census records some of which can be seen only in Washington, the registries of deeds and probated wills in the county seats; and of course one makes extensive use of the libraries of the many fine historical and genealogical societies throughout the country. It is great fun working your way back to Mr. Adam and/or Mrs. Eve. We haven't got that far yet! Many old cemeteries in which we have found interest are covered with a thick jungle of bushes and flat fallen grave stones bearing indecipherable inscriptions. We have the job of uniting (on paper) distant relatives (to each other as well as to us) who haven't seen each other for a hundred or more years. This entertaining research requires much persistent digging — not necessarily downward, but in all other directions — and it is sometimes surprising whom you will meet in your next bramble-covered graveyard." Thanks, Harold, and have a good trip to the Coast!

Our President, Ralph Fletcher, reports the following: "I stopped in Winston-Salem, N.C., on January 11 and had a very pleasant visit with Arvin Page and his wife, including a very enjoyable dinner at their luxurious country club. Arvin is about to retire and is planning a three months' trip to the West Coast. He is driving out in a leisurely fashion on the southern route and planning to play quite a little golf on the way. He has been appointed traveling secretary during this journey with instructions to contact as many '16 classmates as he can find. My visit was quite fruitful, since I reclaimed or recovered the 1916 bells which some may remember were used at one of our five-year reunions. Arvin had been saving them for me for years. I knew they were

mine because there was one dog bell mixed in.

"I also had a nice letter from our Greater New York sparkplug, Jim Evans, who is now retired. Jim enclosed a delicate reminder with a schedule of the monthly class luncheons in New York.

"I was sorry to receive a note from Mrs. Frank Richardson stating that Frank had passed away on July 4, 1958, after suffering for many years with Parkinson's disease. An expression of sympathy on behalf of the Class was sent to Mrs. Richardson.

"At the time of this writing, the announcement of the annual mid-winter dinner for '16 men in Boston has just gone in the mail; and we had our first response today, from Bill Drummey, who said he will be at the dinner on Monday, March 2 at Joseph's Restaurant in Boston."

We close urging that you drop either Ralph Fletcher or your Secretary any bits of news you may have and thus help keep this little old column full and interesting. Plan now to keep the dates June 12, 13, and 14 open for the 43d reunion in Chatham on the Cape, and June 15 for Alumni Day in Cambridge. If you are in New York May 7 or June 4, come to the 1916 class luncheon at the M.I.T. Club of New York in the Hotel Biltmore, right next to the Grand Central Station. — HAROLD F. DODGE, *Secretary*, 96 Briarcliff Road, Mountain Lakes, N.J.

1917

No doubt you will agree that our Secretary, Win McNeill, has been doing a fine job with the class notes, and this with very little help from his assistant. So the latter takes over for this month and has had some interesting responses. There has been comment that the notes tell more and more of retirements, which is true; but we are also getting valuable tips on how to keep busy though retired.

Heinie Gartner is so busy that he even mentions "retiring from retirement." From South Wellfleet, Mass., he writes: "My wife, Elizabeth, and I are still enjoying our retirement project, restoring antique furniture and making reproductions. Starting as a hobby seven years ago, we are working full time under the name of The Barncrafters, our shop being the old barn which we have enlarged by two additions since we have been here. We have so much work and so little leisure that we are now considering retiring from retirement. But with all the work, I still take time to do some bass and blue fishing; also, in season, some oystering, quahogging, and scalloping. I tried my hand in local politics a year ago, running for town moderator. I lost by 10 votes, which for a 'foreigner' or 'off-Caper' was not a bad showing. Having headed the three civic organizations in the town in succession, I am now content to sit back and 'Let George do it.' Periodic trips to Boston for bank duties and shopping sprees help to give us both a change. We took a 7,000 mile auto trip this fall to visit three daughters and their families — 10 grandchildren to date — located in Syracuse, Cleveland, and Boulder, Colo. We came home a south-

ern route and next year it will be the West Coast."

Brick Dunham comes through with an interesting story whereby he says: "There are two good reasons for writing, first because you asked that I tell about my interest in oil painting and second because my story might start another aging classmate on a satisfying hobby. The results to-date include a great deal of satisfaction, also frustration, and a commission for a portrait which is completed and accepted.

"This all started with a present from my wife of a paint box containing three brushes, several tubes of paint, a pallet, turpentine, and linseed oil. This kit went on a fishing camp vacation for two years and was used in the afternoon between morning and afternoon fishing. With this start I enrolled in an evening adult education class for one season. My interest increased, so I changed to a Saturday morning class which I followed steadily for three years, winter and summer. Now I am back on an evening schedule in Boston.

"About 20 years ago I met a young artist who is now a very successful painter of portraits, Mr. Martin W. Kellogg. During our conversation he made the flat statement that anyone could paint as well as he, if they worked as hard as he had. I am now inclined to believe that there is a great deal of truth in this. Of course he is 20 years ahead of me but I have a few years left, I hope; and with retirement coming up, I can look forward to more hours of painting each week.

"I sometimes wonder if my wife continues to be happy over the results of her efforts to start me on this hobby, as our den is a confusion of sketching paper of all sorts and sizes, canvass in a roll, on stretchers, frames and pictures in various stages of completion. Also paint appears on good handkerchiefs which somehow are used as paint rags and even on good clothes. However, she is still my best press agent. That makes me realize that if this goes into the class notes, how can I miss the chance to say I am looking for more commissions.

"Without dragging this story out, which I could do for hours, I suggest that if anyone has the desire to sketch or paint — just start. I strongly suggest enrollment in a class where there is the instruction, to be sure, but also because the association with others who have the same interest affords opportunity to learn. Take time to investigate and I think you will be surprised at the number of classes, all well attended, which are available." Incidentally, Brick has been asked to postpone his retirement from Lewis Shepard Co. for a year. He anticipates grandchild number six this spring.

Colonel Harry A. Wansker was tendered a testimonial luncheon by the New England chapter of the Armed Forces Chemical Association at the Parker House in January. General William E. R. Sullivan, Deputy Chief Chemical Officer, representing the Secretary of the Army, presented to Harry the Secretary of the Army's Certificate of Appreciation. This is the highest honor

that the Army can bestow on a civilian. It was given in recognition of the marvelous work that Harry has done for various branches of the Armed Services, for North Atlantic Treaty Organization, and for other activities. Harry, retired from Carr Fastener Co. on December 1, "is still on the payroll as a consultant."

Dick Lyons has sent a Houston, Texas, clipping telling of the death of Colonel Robert N. Gay on January 9. Bob was in charge of all chemical warfare forces in the South Pacific in World War II. He had been in the real estate business in Houston.

The *Woburn* (Mass.) *Times* tells of Charles E. Lyons completing 30 years, on January 2, with the Kemper Insurance Companies.

John R. Coffin has been named a senior vice-president of Jackson and Moreland, Inc., Boston.

Word from Ralph Ross indicates how well he is occupied in his retirement. He writes that prior to his retirement in 1956 they had bought a place in Danville, eight miles from his birthplace in St. Johnsbury, Vt. The plan was to take time remodeling the house, see the children and grandchildren, and take things easy. But he unsuspectingly permitted himself to be elected trustee and president of the board of 52-bed Brightlook Hospital in St. Johnsbury. It is also a nonprofit hospital but had taken this aspect of its affairs so seriously as to be about bankrupt. With the administrator stepping out and Ralph stepping in it turned out to be a 40- to 50-hour a week job, but most challenging and rewarding. Because it seemed to be a way of learning more about the hospital business, he permitted himself to be a trustee of the Vermont Hospital Association with the result that he has become president-elect, to take office next October.

Also, the citizens of Danville have seen fit to elect Ralph to the board of school directors, and an addition to the high school is underway. As a trustee of St. Johnsbury Academy, he is interested in a fund drive that is now on. Ralph writes: "This, then, with the usual social activities, plus the Danville Fair and the Fall Foliage Festival, is retirement in Vermont. The plain fact is that people here don't believe in retirement except as forced by physical or mental disability. Those of you about to retire, look well where you are about to leap.

"Last November my wife and I spent about a week visiting most pleasantly his good wife Helen and that class treasurer than whose no treasurer's reports were ever more lucid. Only one who has not heard one delivered in the flesh would have to be told that I refer to one Lucius Tuttle Hill. In December we spent three weeks visiting four of our children in Pennsylvania and Maryland. This was just in time to view our 17th grandchild."

Who in the Class is the champion grandpa? Here is Ralph Ross with 17 grandchildren. Was it 14 that Peso Moody mentioned at our 40th?

Paul Dudley is specializing in the sale of mutual funds, being associated with Nelson S. Burbank and Co. in Boston. He lives in Milton and has three grandchildren.

Barney Dodge writes from the Sterling Chemistry Laboratory at Yale: "I am not the world traveler that Ken Bell is, but I have done pretty well in the last year and a half. I took a year's sabbatical leave in 1957-58. Starting in May of '57 Mrs. Dodge and I spent about three months in Sicily, Yugoslavia, Austria, Switzerland, Spain, France, and would have got to Greece except for ship trouble such that we could not load our car.

"Back in New Haven in late July I worked on various things until September 30, when I flew to Caracas, Venezuela, where I had an appointment to lecture at the National University for two months. I carried on my classes in Spanish, which I had taught myself over a period of several months. Everything went well until the students started the rebellion. The University was closed but I stayed on, although the real revolution came after I left.

"I returned to New Haven and toward the end of January we sailed for France, again taking our car with us. I had a Fulbright appointment to teach chemical engineering at two universities in Lille, France. I taught in French, in which I am fairly fluent. Mrs. Dodge and I had a very nice apartment in Lille and from there took many fine trips, even to Spain and Portugal, where we visited friends we made when I taught there in '54. We also visited the Brussels Fair. I liked the U.S. pavilion and the U.S. exhibits and do not agree at all with the criticisms I have read. Holland in tulip time is, to me, the greatest sight in Europe.

"Our travels are over for a while and we spent most of the summer in New Haven except for numerous excursions including attending various meetings. I do some consulting work so make trips in connection with that work. When attending a Gordon conference at Meriden, N. H., last summer, Phil Hulburd phoned me; and we had a very pleasant afternoon at their lovely summer home.

"In August I had a hospital repair job done and I was back in good shape in a few weeks. It might interest some of our classmates that I took up skiing at the age of 57. It's a great sport and I try to get to Stowe, Vt., several times during the winter. Also I have renewed my interest in skating, largely because of the new Yale rink just across the street from my office.

"To finish off, I should mention that my first grandchild was born in November, 1958."

Haig Solakian is not joining the retired ranks as yet. On a general checkup the doctor told him he ought to be ashamed even to consider such a thing. He and his wife Rose (champion reunion putter) had a very pleasant surprise visit from Skipper Walt Beadle and Mate Christine, aboard the *Snow Goose*, as they stopped at Pine Orchard, Conn., on their return cruise.

Ken Bell had a chance to go to Formosa in his leather consulting capacity but turned it down in order to stay home for a while. Ken mentions that on his last year's trip there were four '17 men at one time in the Hallicarini Hotel, Honolulu: Stan Lane, Josh Whetzel, E. C. Matthews, and himself. In his retire-

ment, Ken does some writing such as the section on leather in the 50-year book of the American Institute of Chemical Engineers; the leather article for the technical encyclopedia which McGraw-Hill has in preparation; and his report on the leather industry of Pakistan. He also enjoyed a climb of Bald Knob on Ossipee Mountain with Jim Killian '26 last Columbus Day. STANLEY C. DUNNING. — W. I. McNEILL, *Secretary*, 107 Wood Pond Road, West Hartford 7, Conn. STANLEY C. DUNNING, *Assistant Secretary*, 21 Washington Avenue, Cambridge 40, Mass.

1918

Great rivers start in little trickles and rills way back in the highlands before becoming rushing streams in the valleys, and wide waterways along the plains. So it is with men's lives. Van Zelm was drawing his little cartoons when he should have been high in the hills of the history of architecture. But the rill outran the forest of structural design until now two newspapers printed feature articles about him in a single week. His Thanksgiving cartoon has just arrived, gentle and exciting as usual in the imaginative loveliness with which he draws his elfin characters. Sitting around the abundant sylvan table his "Van Gnome" characters are giving thanks for their many blessings.

After leaving the classes in architecture he followed a career in that field for several years. With the Bell Syndicate, he created the "Rusty and Bub" series, later with King Features he collaborated with J. P. McEvoy on the comic strip "The Potters." The Van Gnomes, whom he created after joining the *Christian Science Monitor*, ran also in a British newspaper, and became the models for ceramic figurines which enjoyed popularity. And after an absence of several years from the cartoon field he has developed a new series, "The Farnsworths." Farnsworth is a dapper little millionaire who is familiar to newspaper readers from Maine to Missouri, and even beyond that great river. His is no blood and thunder adventure, but the humorous annals of problems which could beset almost anyone, like where to park your gum while a guest in a house full of antique chairs, or how to converse with your wife at the opposite end of a block long dining room table laden with the fruits of wealth. By working 10 hours a day Van is three months ahead with his production, about twice the usual syndicate requirement. Van's wife is the sister of the girl who married Bob Sprague, Course XIII-A, '23, who soon left the Naval Construction Corps to found Sprague Electric Company in North Adams, of which he is now chairman of the board.

The sources of Carleton W. Blanchard's stream of life started from Somerville, Mass., via Course XV, to run toward business administration from the beginning. The stream is now a torrent. Recently elected to the board of the Acme Wire Company of New Haven, he was already president of Wyatt Inc., which he helped to organize. He is direc-

tor of the First National Bank, vice-president of the Independent Oil Men's Association, member of the New Haven Harbor Development Commission. All streams eventually reach the sea, or go salt all by themselves! Howard Cyr, now of Palmerton, Pa., has acquired a tributary, for on January 2 he married Miss Esperance S. Mason of Everett, Mass. Howard supervises the metallurgical research for the New Jersey Zinc Company. To his credit he holds several patents and wrote a book on metallurgy.

Speaking of books, I wrote my first one when 14 years of age. It was never published. But ink continued to flow down my quill, and now my 10th published volume, titled *Successfully Finding Yourself and Your Job*, is out. It represents about 20 per cent of what I taught at M.I.T. all those years. Vannavar Bush '16, writing a criticism for Harper and Brothers, said: "While this book is directed primarily at the young man who is trying to map out his career, it would be equally useful to the older men who are not quite sure that they are located in the right spot. I have a feeling also that it should be read by many fathers, for its value of sage advice is expressed in thought-provoking language, and with an utterly fresh point of view. Whether one agrees with him or not, Magoun writes well, and he knows youth from long study, and expresses for them thoughts which are the embodiment of mature wisdom."

Since Ralph Whitcomb's death in January I have learned more about his career. He was town moderator for Sharon at the time of his death, a post he held for 19 years. He was also a member of the warrant committee and the school committee, and had been chairman of both several times. He was chairman of the rationing board and headed the disaster committee during World War II. He was a former chairman of the Republican Town Committee. Ralph was a past master (1935-37) of Blue Hill Lodge, A.F. and A.M.; a member of the Joseph Warren Commandery, K.T., and the Sharon Country Club. He was a director and vice-president of the Sharon Co-operative Bank, a trustee of the Eliot Savings Bank of Roxbury, a trustee of Chauncy Hall School, and a past president of the Charitable Mechanics Association. He leaves a wife, Ardys (Freeman) Whitcomb; a daughter, Mrs. Leslie W. Eyman of Stoneham; a son, Charles F. of East Dennis; and two grandchildren. — F. ALEXANDER MAGOUN, *Secretary*, Jaffrey Center, N.H.

1919

Received a nice note from Cutter Davis (together with his contribution toward our 40th reunion gift to M.I.T.) in which he says that being retired isn't what it's cracked up to be; so he's back in harness again, a registered representative with Truber Collins and Co., a Buffalo brokerage firm associated with Fahnstock Co. And he says: "If you ever get to Buffalo, do give me a ring." Will do, Cutter, will do!

Harold Bugbee, *Secretary* for the Class of 1920, very kindly forwarded to

me some information that Charles (Dodie) Brown '20 had conveyed to him. Sorry, though, that it had to be sad news: Our M. R. Dias '19 passed away in Sao Paulo, Brazil, on June 9 last, and Bob Falkenberg '19 passed away on October 17. Both deaths attributed to heart attacks. Which should remind us all to take it easier these days. A friend of mine was told by his doctor the other day: "You look young, and I guess you probably feel young; just don't try to prove it." Good sound advice! Harold himself is apparently feeling fine, and he wished us all a very successful 40th reunion in June. Hope you're all making your plans to be there!

Card from Jack Fleckenstein in which he says he and Rene will be at the reunion . . . God willing! He adds: "Family all in good health and we now have our third grandchild, as Joan (M.I.T. '53) had a baby girl March 31 last. She and her husband live in Taft, Calif., where he is an engineer with the Standard Oil of California. Our other daughter, Jacqueline, has two boys, aged seven and three and one-half. Rene and I had some thoroughly enjoyable hunting last fall — got the limits of sharp-tailed grouse and partridge and Canada geese, but missed out on deer." He sends his regards to you all.

A card from Ev Doten said that Detroit was taken over on January 31 when the M.I.T. Regional Conference was held there, and he boasts: "Class of '19 was represented 100 per cent." He sends best wishes, too.

We'd very much like to have the correct current addresses for the following '19 classmates; our mail to them has been returned from the last known address: R. C. Baldes; Daniel N. Crowley, Jr.; Russell Hamilton; M. L. Hayden; Robert Insley; Frederic M. Lee; Edward Mowry Sherman; and Edwin Chester Shultz.

We have new addresses for the following: Cutter Davis, 19 East Avenue, Springville, Erie County, N.Y.; Wilbur S. Burbank, 9 Bayberry Lane, Exeter, N.H.; Charles T. Kennedy, Ferro Concrete Construction Company, Gwynne Building, Cincinnati 2, Ohio; Sarkis M. Madancy, 33 Stowcraft Road, Arlington 73, Mass.; Professor Carl L. Svenson, Room 3-250, M.I.T., Cambridge 39, Mass.; and Kenneth A. Wright, 1631 Hinman Avenue, Evanston, Ill.

Now, if each of you TODAY will sit down and write us a postcard, and then do it again every few months, we'll be able to let the other boys know what's doing with you and yours. Come on, WRITE! — E. R. SMOLEY, *Secretary*, c/o The Lummus Company, 385 Madison Avenue, New York 17, N.Y.

1920

Things are perking up. Your Secretary actually received written communications from no less than three classmates this month. Each one referred to the 40th reunion, so I take this as a good sign. It is not too soon for the rest of you to be thinking of this and planning for it. It will, of course, be in June, 1960, and we hope it will be at the Sheldon

House. Buz Burroughs is chairman, and we think we can all count on him to keep things buzzing.

Hank Couch writes that he and his wife attended parents week end at M.I.T. last spring and enjoyed it very much. He was impressed with the tremendous changes and growth at the Institute but says that many of the classrooms, laboratories, and such were much as he remembered them as an undergraduate. Hank reports that Herb Federhen and his wife stopped for a visit in Rochester last summer and Herb showed him some Kodachrome transparencies of the 35th reunion. I think we can count on Herb bringing them to the next reunion for all of us to see. Hank says he is working on Don Kimball to attend the 40th. Hank himself has a daughter graduating from Skidmore in June, 1960, but hopes to make the reunion anyway. Hank had some bad news about Ed Farrow; Ed has been very ill for the past two months or more and we can only await news of his recovery, which may be slow.

Dozie Brown writes that he is with Burns and McDonnell Engineering Co. in Kansas City still chasing B.T.U.'s and working on his first 1,000° reheat steam turbine. He has been with this firm for 36 years. He recently retired from the U. S. Naval Reserve after 20 years of service, with the rank of commander. His daughter, Nancy, is with the Campfire Girls in Denver, Colo.; and his son, Charlie, is finishing law school at the University of Missouri. Dozie says he is looking forward to the reunion and plans to be there. He says he told his wife that he made the motion to confine attendance to members of the Class; and she said it was O.K. by her as she was not interested in a bunch of old men, anyway. Classmates desiring to communicate with him may address C. E. Brown, 7635 Holmes Road, Kansas City, Mo.

A letter from Bill Honiss written from his winter home at 3404 East Dover Road, Pompano Beach, Fla., advised that he recently came across a 1920 class banner measuring 30 inches by 70 inches and would be glad to bequeath it for the 40th and future reunions, if Chairman Buz Burroughs is interested. He promises to get it dry cleaned first. Bill is still a development engineer with Emhart Manufacturing Co. in Hartford, in the division which designs and manufactures glass container production equipment. He has two children and four grandchildren. His daughter is married to Jim Kelso, who is administrative assistant to President Stratton at M.I.T. His son is in his final year at Boston University.

In Montreal not long ago I had the pleasure of a visit with Foster Doane. Foster and his family had spent some time at Frank Badger's place in Hollywood Beach, Fla., and reported that Frank was in good shape. Foster is widely known and highly respected throughout the pulp and paper industry. He is a top executive of Bergstrom Paper Co., Neenah, Wis.

Bob Patterson's distinguished countenance appeared in the Boston papers earlier this year with an announcement that he had been promoted from vice-

president of the Bond Department at John Hancock to vice-president of Finance. Ralph Booth has been named president of Jackson and Moreland, Inc., with which firm he has been ever since graduation. His work has been along the lines of economic studies, design and supervision of construction of thermal and hydro-electric plants for both utilities and industrials. He is a fellow of the American Institute of Electrical Engineers and a member of the American Society of Mechanical Engineers and the American Petroleum Institute. Henry Hills has been made a vice-president of Jackson and Moreland. Before joining that firm in 1936 he was with Westinghouse, with Southern California Edison, an instructor in electrical engineering at M.I.T., with the Philadelphia Electric Company, and with the Baltimore Gas and Electric Company. During the war he served as a lieutenant in the U.S. Navy. Henry is also a fellow of the American Institute of Electrical Engineers and he is a member of the American Gas Association. He has been a trustee of Eastern Gas and Fuel Associates for many years.

Dusty Miller of Phoenix, Ariz., has been made an information and extension counselor of Rotary International. Dusty is senior representative of the Johns-Manville Sales Corporation in Phoenix. He is a past president of the Rotary Club of Phoenix, of the Arizona Automobile Association, of the Arizona Sewage and Water Works Association; a vice-president of the Good Samaritan Hospital; and a director of the American Water Works Association.

Dr. Charles E. Ruby has left Boston and is now in Louisville, Ky., address 2317 Alta Avenue. Johnny Rockefeller has moved from Millburn, N.J., to Short Hills, N.J., address 640 Morris Turnpike.

Let me say again that now is not too soon to advise us that you are coming to the 40th reunion. It would not only bolster our spirits to hear this but it would help us in making our plans. — HAROLD BUGBEE, *Secretary*, 7 Dartmouth Street, Winchester, Mass.

1921

As we welcome our new boss, Volta Torrey, 11th in a line of distinguished editors of *The Technology Review*, we want to record a personal share of the tremendous vote of thanks and appreciation directed to retiring Editor Bev Dudley '35. For the entire Class of 1921 there goes to Bev their portion of this generally silent but nonetheless real and deep regard for a good job well done throughout the 14 years he has piloted *The Review* to an enviable standard of excellence amongst college alumni magazines. We have had the privilege of serving under outstanding *Review* editors, including our beloved Chairman of the M.I.T. Corporation, Jim Killian '26; the master publicist, Lobby Lobdell '17; the ever popular late Tubby Rogers; the academician, Fred Fassett, Jr.; and the erudite Eric Hodgins '22. Within this elite hall of fame group, Bev Dudley certainly has earned a permanent niche. To Editor Torrey is

extended a warm handclasp in anticipation of a continuation under his leadership of the fast pace at which *The Review* has grown in stature, and also to pledge to him the wholehearted support of all the members, activities committees, and officers of the Class of 1921.

Biggest 1921 news story of the month is that the Sheraton Corporation of America — Ernie Henderson, President, and Bob Moore, Chairman of the Board — has bought four plush Waikiki Beach hotels — the Royal Hawaiian, Princess Kaiulani, Moana, and the Surfrider. This first overseas move adds 1,050 rooms to the 24,405 already being run by Sheraton in 48 hotels in the U.S.A. and Canada as one of the world's largest hotel chains. Ernie is quoted as listing the probable inauguration of jet plane service to Hawaii later this year and the likelihood of the Islands becoming the 50th state as principal attractions. The Honolulu 1921 contingent — Harry Field, the Reverend Will Wirt, and Fred Kingman — ought to get Ernie and Bob to join them in setting up a future 1921 reunion in Hawaii, for which Harry has pleaded so often, especially on those occasions when Helier Rodríguez offered the now-achieved counter proposal for us to gather in Havana.

Speaking of Bob Moore recalls a recent perusal of the huge volume, *Technology's War Record*, compiled by the Alumni Association to present the contributions of M.I.T. and its family in World War I. Bob, then a first lieutenant in the U.S. Air Service, was awarded the Croix de Guerre with Palm. Robert S. Cook, then a second lieutenant in the U.S. Field Artillery, is also listed as the recipient of a citation from the First Division, American Expeditionary Force. We inadvertently omitted from the listing of those honored by election to the presidency of national professional societies the name of Al Bachmann, who was made president of the American Pulp and Paper Superintendents Association. This raises the total membership in the 1921 National Presidents Club to seven.

Dr. Manuel Sandoval Vallarta and Viviano Valdes are listed among the top echelon committee for last month's annual fiesta of the M.I.T. Club of Mexico City. Jack Barriger of Pittsburgh was planning to attend. Seventeen pages of reporting cover Saul Silverstein's seventh trip overseas in the last eight years, this time to Europe and Israel by jet plane both ways. Thanks, Saul, for a most interesting account. It's great reading but it just can't be condensed or summarized without losing completely the characteristic flavor which gives it third dimension in color.

The Reverend William F. Hastings has returned from his work abroad and has accepted an assignment as minister of the Edinburg United Church, Ravenna, Ohio. John W. Shepard says he makes his home at 9 Day Street, North Easton, Mass. Addresses have also been received for the following and may be obtained from your Secretary: Dr. Axel G. H. Andersen, Commander Glenn H. Easton, Lighthouse Evans, Rear Admiral Grover C. Klein, John J. McCloskey, Clifton B. Morse, and Victor S. Phaneuf.

A welcome letter from Phil Nelles acknowledges receipt of color enlargements of the beautiful pictures which Bob Miller made of Phil and Alice during our Havana reunion last year. Phil says, in part: "The most wonderful Christmas present to me this year was the two beautifully colored prints you sent me. They arrived in perfect shape and even before your most sympathetic and friendly letter. I never knew the pictures were taken and Alice never had a chance to see them. I can only say thanks many times over as I tell you they were a great lift to my spirits. Such perfect pictures add to the pleasure of having them. I am keeping my home and have no intention of moving. It does get lonesome at times, but I keep myself busy. Patty and her family are not far away, and we are both frequent callers on each other. I am looking forward to our gathering at Alumni Day in June."

A number of phone calls and letters from our Class President, Ray St. Laurent, continue to point up the enormous amount of time and effort which he and so many others of the Class devote towards the ultimate success of various projects, mostly for your enjoyment. Our BIG 40th reunion, coinciding with the extensive celebration of Technology's centennial in 1961, is the subject of considerable advance planning which has been in progress for some time past. Ray was in New York in January and had dinner with Irv Jakobson in preparation for a February meeting in Boston of Reunion Chairman Mel Jenney, Mich Bawden, Chick Kurth, Ted Steffian, Irv, and Ray to put in motion the initial steps which will result in the unfolding of our biggest reunion project two years hence. Next, a March meeting of this group in New York, with your Secretary and others, is scheduled to complete the advance stages. Much of this early effort results from the plan conceived several years ago to make the 40th reunion of the Class of 1921 the really BIG one, a plan which the Alumni Association subsequently adopted for all classes, assigning to 1921 the honor of being the first to be so recognized. You can be assured that the BIG 40th will be just that and your help will be appreciated in any of several ways: by offering to serve on Mel Jenney's committee, by sending Mel your ideas on the "What" and "How" of the reunion program, and by planning now to be there in 1961!

Ray reports a recent luncheon meeting at the M.I.T. Club of New York with William Thompson Smith, senior engineer of Ford, Bacon, and Davis, New York City. Bill has been with the company for 35 years and has had responsibility for a number of interesting projects in the U.S.A. and in foreign countries. He spent some time in Japan right after World War II and was in Pakistan for several years on the construction of paper, steel, and textile mills. Pipe lines in Canada took him to Calgary, Alberta, for an extended stay. Bill and his wife, Claude, live in Larchmont, N.Y. Son Michael attended Dartmouth and New York University. He is married and has three children. Daughter Priscilla Alden is the ninth great-granddaughter in direct line from the original Priscilla Alden. She

is married and also has a daughter named Priscilla Alden. Son Alexander, Dartmouth and University of Cincinnati, is a doctor in Chicago. He has three sons. Ray also reports telephone conversations with Dan Harvey and Bill Plummer in New York.

The current standing of the Class in the lead of all classes for the special gifts program has been the subject of letters from Ray to Mich Bawden, Special Gifts Chairman, and to a number of those on his committee as well as to Class Agent Ed Farrand and Assistant Class Agent Lark Randall. Among the regional chairmen is another from the Class who was omitted from our recent list: Romney J. Mellen, who is actively heading the El Paso, Texas, area. The amity fund report you received shows an increase in 1921 participation, for which thanks go to you as well as to Ed and Lark. Our Class is the 35th in size of the 62 class units reporting and is 22d in actual number of contributors last year. However, the amount given during the year was the EIGHTH largest sum. Throughout the 18 years the Amity Fund has been in existence, the Class has given the 13th largest total amount — a splendid record; and there are indications that it will be bettered.

Your Assistant Secretary received a letter from Glenn Stanton, architect of Portland, Ore., which contains news about so many classmates that we are quoting it in full: "That evening with you last June as a guest of the Boston Society of Architects at the Harvard Club in Boston was a gala occasion for me. I was proud to be at the head table when the various scholarships were announced and when you were elected president of the organization. It is an honor you have well earned and one I failed to find noted in our 1921 column in *The Review*. [Glenn: Ted didn't tell me; I have to depend upon the clipping services for news of him! — Cac] You might like to know that Walter Church and his wife, Bernice, have been in Europe for about a year, enjoying leisurely stops at a few earlier haunts. They are currently in Majorca on the Spanish Riviera. Jimmie Smith, also a fellow of the American Institute of Architects and a member of the board of directors during my presidency, continues his activities in Institute affairs by serving on the national judiciary committee.

"Jack Winn, Manager of the port of Portland, never finds existence dull. One of his recent projects was the completion of a multimillion dollar airport terminal building to serve national and international lines. Harold Cake and his wife report a most enjoyable motor trip through Europe last summer, including the Brussels Fair and other high spots. Cookie gave a showing of slides from the trip at the University Club family dinner night, and a capacity crowd enjoyed the evening. My office fortunately continues to enjoy commissions that keep us interested and occupied. The enclosed clipping notes my reappointment to Portland's City Planning Commission. My term will total 17 years under three mayors, part of the time as president of the Commission."

The article, from the *Portland Orego-*

nian, says this about Glenn: "A prominent architect, he has served continuously on the nine-member City Planning Commission since 1941, except for a six-year interim. Stanton has been national president of the American Institute of Architects, president of its Oregon chapter, and has served on the Oregon State Board of Architectural Examiners." Many thanks, Glenn.

The folder, "M.I.T. Alumni Make News, 1958," attached to the January letter to all Alumni from President John Wilson '29 of the Alumni Association, lists two of the heads of national societies already mentioned in these columns: Joe Gillson and Al Bachmann. Recognition is also given to Dave Woodbury's popular book, *Around the World in Ninety Minutes*, and the story of how he had to make last-minute revisions in page proof when the first sputnik made its unheralded appearance! Thanks for the publicity, John.

Supplementing the listing last month of the activities of various members of the Class in Alumni affairs, here are those who are listed in official capacities within the official family of the Institute. Victor O. Homerberg is professor of physical metallurgy emeritus, residing in Santa Barbara, Calif. John T. Rule is dean of students in the academic administration of Technology and also professor of engineering graphics. Edward R. Schwarz is professor of mechanical engineering in charge of the course in textile technology. Melvin R. Jenney is patent counselor for the Division of Sponsored Research. Henry M. Lane is on the staff of the Lincoln Laboratory.

Vernon C. Cole of Prospect, Conn., has been named production superintendent of the Connecticut Light and Power Company. He has been with the company for 35 years, starting as combustion engineer at the Devon steam power station and rising through the ranks to boiler room engineer, field engineer, assistant engineer of the operating department, superintendent of the Montville plant, and results engineer. He is a member of the American Society of Mechanical Engineers and the Somerset Lodge of Masons. He and Mrs. Cole have a daughter and three sons, all graduates of the University of Connecticut, and seven grandchildren. A personal note from Bob Miller includes the news that he planned to attend a talk by Jim Killian '26 to a joint M.I.T.-Harvard group in Washington in February. Bob also reminisced about the class reunion in Havana and forwarded details of the death of Walter Hagerton.

It is with profound sorrow that we record the passing of two of our members and extend sincere sympathy to their families on behalf of the entire Class of 1921.

Walter Charles Hagerton, Branch Manager of the Material Requirements Division, Logistical Planning, Bureau of Yards and Docks of the Department of the Navy, died suddenly at his home in Silver Spring, Md., on January 4, 1959. Born in Boston on November 2, 1897, he prepared for Technology at the Chauncy Hall School and entered as a freshman in 1917. At the Institute, he was a member of the Electrical Engineering Society,

the Radio Society and the Catholic Club. In World War I, he served as a private in the Students' Army Training Corps at M.I.T. Walter was graduated with us in Course VI and joined the engineering staff of the Temple Lamp Company, Boston. In the Thirties, he worked with Dr. Vannevar Bush¹⁶ on research projects at the Institute and became a field engineer for the Massachusetts Works Progress Administration in 1938. In 1941, he went to Washington, where he joined the staff of the Corps of Engineers in the War Department and transferred in the following year to the Navy's Bureau of Yards and Docks. Mrs. Hagerton died in 1941 and Walter made his home with his daughter, Mrs. Jane Frances Hagerton Ryan. Jane was graduated from the University of Maryland in 1957 with a bachelor's degree in European history as the eighth student in a class of about 2,000. Last June, she was married to Lee Edward Ryan, Jr., of Salisbury, Md. We are indebted to Mrs. Ryan and to Bob Miller for their aid in preparing these notes.

George Frank Lord, Vice-president of the realty and insurance firm of Wheeler and Taylor, died at his home in Great Barrington, Mass., on January 30, 1959. Born in Athol, Mass., on August 7, 1897, the son of Frederick W. and Addie Stowel Lord, he attended Dartmouth and entered Technology as a freshman in 1917. At the Institute, he was a member of Theta Chi, the Mandolin Club, Banjo Club, and Corporation XV. He served in World War I with the rank of first lieutenant. He was graduated with us in Course XV and was then employed by the New England Telephone and Telegraph Company, later becoming a special agent for the Travelers Insurance Company. He became associated with Wheeler and Taylor on going to Great Barrington 22 years ago. He was active as a member and past president of the Rotary Club, the Wyantenuck Country Club, the Star Lodge of Masons, the Aleppo Shrine Temple, the Southern Berkshire draft board, the local American Legion Post, and trustee of the Berkshire Foundation. Fritz, as he was affectionately known by the Class, was also vice-president and director of the Massachusetts Association of Insurance Agents and a director of the Pioneer Credit Corporation and the Gemero Company. He leaves his wife, the former Katrina W. Bittinger of Plymouth, Mass.; a daughter, Mrs. Melissa Lord McCandless, Mt. Holyoke⁴⁹, Columbia⁵⁰, of Slingerlands, N.Y.; a son, Frederick W. Lord, Dartmouth⁵¹, Harvard Graduate School⁵⁴, of Stockbridge, Mass.; a brother, Harold S. Lord of Arlington, Mass.; an uncle, William G. Lord of Athol, Mass.; three grandchildren; and two nieces. We are indebted to Miss Marjorie Fuller of Stamford, Conn., for supplying data to prepare these notes.

Just two months to Alumni Day on campus in Cambridge on Monday, June 15, 1959. Bring your family and guests and join the 1921 group for a full day of enjoyment. Announcement has been made that another Alumni Officers Conference will be held at the Institute next September 11 and 12, and you may be sure that 1921 will take this opportunity for another gathering. Above all, make

your plans now for taking part in the BIG fortieth reunion in 1961. — CAROLE A. CLARKE, *Secretary*, Components Division, International Telephone and Telegraph Corporation, 100 Kingsland Road, Clifton, N.J. EDWIN T. STEFFIAN, *Assistant Secretary*, Edwin T. Steffian, Architect, 11 Beacon Street, Boston 8, Mass.

1922

Your Secretary is penning these notes on the back of an old envelope while standing with one foot on the ascending steps of a Florida-bound plane. He hopes to send oranges or best wishes to all of the Class from Mountain Lake.

Our January issue published the names of class regional chairmen for the 40th anniversary gift campaign from Baker to King. The remaining names follow: Andrew S. La Penta; John L. Liecty; Julian Lovejoy; Carl J. Lundborg; William K. MacMahon; H. W. McCurdy; Julian B. McFarland; Charles B. Miller, Jr.; John C. Molinar; Harvard E. Moor; C. Randolph Myer, Jr.; Bennett Myers; Paul R. Nash; Willard B. Purinton; Norman P. Randlett; William G. Rapp; Frank O. Rickers; Charles G. Rudderham; Dr. Walter M. Saunders, Jr.; William Schulman; Dale D. Spoor; Arthur Slepian; Philip C. Stevens; Charles W. Stose; Thomas M. Taylor; L. S. Vadner; Everett W. Vilett; James M. Waechter; and Othneil G. Williams. The record of their activity is excellent for the past year.

Several class members including Assistant Secretary C. George Dandrow ask that congratulations be heaped upon Clayton D. Grover who, in addition to his presidency, has been elected chief officer of Whitehead Metals, Inc., an affiliate of International Nickel Co., Inc. Be sure to buy your nickels from Clate. The news release also tells us that Clate was born in Mansfield, Mass.; taught chemistry at the University of Rochester; and joined the International Nickel Co. in 1925 at Huntington, W. Va. He was transferred in 1927 to the Boston office and became manager of Whitehead's branch in Buffalo in 1929. He was secretary and president of the M.I.T. Alumni Club here in Buffalo during his five years' stay and moved to New York in 1934. Clate was made assistant to the president of Whitehead in 1939, vice-president in 1941, and president in 1954. He has been a director of the Company since 1949.

Broderick Haskell, Director of Investments of the International Finance Corporation, Washington, D.C., had an important segment of a program entitled Sources of Financing International Operations sponsored by the American Management Association in New York in February. The I.F.C.'s purpose is to further economic progress in its least developed member countries. Brod detailed conditions of eligibility for investment participation and described the type of investment in the terms I.F.C. is seeking. He explained currency of investment and revolving of the portfolio as well as outlining the broad considerations of purpose. The sympathy of the Class is extended to the family of Benjamin F. Adams, who passed away at Lancaster, Pa., on November 4, 1958.

You may be interested to know some of the new addresses received: John A. Plimpton, Wormwood Hill, Mansfield Center, Conn.; Clarke T. Harding, East Rayborn Road, Millington, N.J.; Carl W. Harris, 939 Elmwood Street, Evanston, Ill.; Roland H. Becker, 129 Bay Point Drive, St. Petersburg, Fla.; Philip C. Stevens, 306 Mills Building, El Paso, Texas; Donald F. Bixler, Paoli-Berwyn Road, Berwyn, Pa.; Seward W. Livermore, 7200 Ridgewood Avenue, Chevy Chase 15, Md.; Arthur E. Meling, Carrier Corp., Syracuse 1, N.Y.; Harland A. Wilbur, 11 Cambridge Street, Winchester, Mass.; Nathan Snyder, 625 North Broad Street, Elizabeth, N.J.; Harold D. Stanley, 709 East State Street, Harrisburg, Pa.; Donald S. Phelps, 260-22nd Avenue Northwest, Great Falls, Mont.; Jack Morrill, 85 Elliott Street, Springfield 5, Mass.; Dr. C. Rogers McCullough, 15201 Rosecroft Road, Manor Club, Rockville, Md. How about writing these and other classmates to join us at Alumni Day this year in June? The Class is always well represented—especially at the cocktail party and dinner. Please come. — WHITWORTH FERGUSON, *Secretary*, 333 Ellicott Street, Buffalo, N.Y. C. GEORGE DANDROW, *Assistant Secretary*, Johns-Manville Corporation, 22 East 40th Street, New York 16, N.Y.

1923

Howard Russell has sent me a copy of the letter that he recently received from Ernesto B. Ledesma, and I am going to quote parts of it as it will probably be of interest to many members of our Class. Ernesto is superintendent of the Philippine Long Distance Telephone Company, and two of his sons—namely, Ervie and Jo-Jo—are currently in this country. Ervie is married and is currently studying electronics at the Radio Corporation of America Institute in New York City. Jo-Jo is studying the insurance business and is currently with Howard Russell in Improved Risk Mutuals and plans to go to the Harvard Business School, or possibly to London, Lloyd's. Howard and Mrs. Russell entertained them during the Thanksgiving holiday.

Excerpts from Ernesto's letter are as follows: "Ervie, Linda, and Jo-Jo had written to say how nice you had been to them. I recall the days I was in Cambridge as a student when kind American families made me enjoy the blessings of home during holidays. We are building a new modern building to house our offices. Where we are now is a makeshift affair built after the war. We expect to move into the new building next March. It is fully air-conditioned, a must in this part of the world. In our pending file we have many applicants for telephone service whom we cannot serve. Our problem has been to get enough dollars with which to buy equipment. This year, however, we are able to negotiate private loans in the United States in the total amount of \$10,000,000. With this amount, we will be able to install 30,000 new telephones, that is 8,000 more than the pending number of applications."

Another note from Howard Russell indicates that Jack Zimmerman, Lem

Tremaine, Channing Clapp, John J. Murphy, Joel Lund, Doc Smith, and himself had dinner with our Class President, Ray Bond, at the M.I.T. Club in the Hotel Biltmore January 22. Bondy attends the annual meeting of the National Fire Protection Association, and apparently it is customary for this group to get together for dinner and settle all problems connected with the Class, the country, and the world. Howard opined that it is doubtful if there are any headlines in the paper concerning their decisions, but he feels that there is one piece of news that you should be made aware of; and that is that Murphy did a lot of boasting about his 10 grandchildren and the 11th on the way.

An item in the official United States Tennis Association News indicates that Martin Tressel'24, Chairman of the junior development committee, has outlined for the coming year a most ambitious program which should provide the opportunity for many thousands of additional children to learn to play tennis. As you will recall, Martin was a top-notch tennis player during his days at M.I.T., and he still continues to wield a mean racket. Your Secretary's and Martin's paths have crossed on several occasions during the past few years in the tennis tournaments in New Jersey and Massachusetts. Martin is with the Aluminum Company of America in Pittsburgh, Pa.

Your Secretary recently received the following note from Professor Jose C. Bertino, Talcahuano 77, Buenos Aires, Argentina, South America, which is self-explanatory, and in which he wants to say hello to several members of our Class: "I do want to thank you for the beautiful and most interesting booklet about the reunion at the Pines, Cotuit, Mass. I am really sorry that I could not be there, but I do expect to do so at the Big Reunion, at the 40th anniversary of our graduation. I do hope to see all, beginning—I can say—with my well-known classmates and friends: Bond, Pennypacker, Burchard, Proctor, Skinner, Zimmerman, Chaisson, and you too, if you do not mind?! Once again my thanks, and best wishes for the achievement of the class officers (1958-63) in making a success of the 40th class reunion."

A recent letter from J. J. Wilson'29, President of the Alumni Association, indicates that the inauguration of our fellow classmate, Dr. Julius A. Stratton, as President of M.I.T., will take place on the morning of Alumni Day, June 15, 1959. This is a date that you should mark on your calendar, and we should have a good representation from the Class of 1923—so plan to be there. New presidents in 1958 include the name of Rodolphus K. Turner, of the Bake-ite Company.

Last month's notes indicated that Toby Pearson is now president of the Construction Chemicals, Ltd. Toby retired as vice-president of the Canadian Dewey and Almy Division of the W. R. Grace Co. to form a new distributorship after 35 years with Dewey and Almy. This new concern will be exclusive distributor in Ontario of Dewey and Almy

Chemicals, incorporated into concrete and asphalt to improve their qualities. Toby is past president of the M.I.T. Club of Quebec and is currently president of the M.I.T. Canadian Trust Fund, Inc.; until his present move he was honorary secretary for M.I.T. in Montreal. He wrote the following to the editor-in-chief of the *Pulp and Paper* magazine of Canada: "I don't think you know that Mrs. Pearson and I moved out here early in December. I retired from my company as of the end of the year and have organized a new company out here to take on the exclusive distributorship in Ontario for a line of products manufactured by my former company. In so doing, I hope that I have taken the necessary steps to solve the problem of mandatory retirement at age 65. This is something which I did not look forward to with pleasure. So far, I am having a grand time; and I have every confidence in the future."

Alexander J. Tigges was named vice-president of Jackson and Moreland, Inc., effective August 1, 1958. He has been with Jackson and Moreland except for short periods with the Baldwin Locomotive Company (1943-44) and the Air Preheater Corporation (1945-49). His specialties have included power plant design and system development and studies of dust in flue gases. Mr. Tigges is a member of the American Society of Mechanical Engineers and the American Society of Naval Engineers. He is licensed as a professional engineer in six states and the National Bureau of Engineering Registration.

It is with regret that we announce the following deaths: We were very sorry to hear of the tragic death of Frosty Harmon's 20-year-old daughter, Diana, in an automobile accident late last year. I am sure that Frosty's many friends in the Class extend their sympathy to Frosty and Helen in this great loss. Through Bill LaLonde, we hear of the death of Spike Evans. We wish to extend our sympathy to Mrs. Evans and her children. The memorandum from Bill is as follows:—"This week my wife and I received a letter from Mrs. S. R. Evans telling us S. R. (Spike) Evans (M.I.T., I, '23) passed away on November 6, 1958, at Tucson, Ariz. Spike had been with the Allied Chemical and Dye Corp. at Hopewell, Va., since 1927 and was construction manager of the Nitrogen Division. For reasons of health, Spike retired last June; and he and Mrs. Evans gave up their home in Petersburg, Va., and moved west. Mrs. Evans now resides at 1624 Rockwood Road, Richmond, Va. Spike also leaves one son and two daughters and one grandchild." William S. Brackett, Vice-president in charge of engineering for the Union Carbide Chemical Co., died of a heart attack on January 8 at his home in Charleston, W.Va. Born at Conyngham, Pa., on October 27, 1898, the son of Dr. and Mrs. William W. Brackett, he was reared in New Britain, Conn., and received his B.S. degree in chemical engineering from Middlebury College, Middlebury, Vt., in 1920. He received a master's degree in chemical engineering from M.I.T. in 1923. Mr. Brackett was a member of St.

Matthews Episcopal Church of Charleston, the Edgewood Country Club, and the American Institute of Chemical Engineers. He also was a member of Delta Kappa Epsilon social fraternity. He and his wife, Emily, resided at 1226 Upper Ridgeway Road. Besides his wife, he is survived by a son, W. S. Brackett, Jr., of Deerfield, Ill.; a daughter, Mrs. Eleanor McVey of Charleston; and three grandchildren. We have just been advised that Josiah R. Elliott, Jr., of Sheffield Road, South Egremont, Mass., died on May 21, 1958; and that Vincent H. Larranaga of Santiago, Chile, South America, died on April 19, 1958.

We have been advised of the following new addresses: Miss R. M. Karapet-off Cobb, 77 Grozier Road, Cambridge 38, Mass.; John V. Cook, 428 Boone Trail, Danville, Ky.; Walter Dietz, P.O. Box 2265, Delray Beach, Fla.; Arthur H. Earle, P.O. Box 483, Bernardsville, N.J.; Arthur W. Germer, Lakehill Road, Burnt Hills, N.Y.; Mrs. Howard C. Gould, 1477 Beacon Street, Brookline 46, Mass.; Major General John H. Hinds, 1000 Connecticut Avenue, Northwest, Washington 6, D.C.; Harlow H. Lippincott, C. H. Leavell and Co., 1900 Wyoming Street, El Paso, Texas; J. Lindsay Muir, 9 Diamond Glen Road, Farmington, Conn.; Charles W. Springer, 2287 Oakdale Drive, Highland, Ind.; Albert G. Thomas, 1711 Galloway Drive, Charlottesville, Va.; Captain Floyd A. Tusler, Press and Union League Club, 555 Post Street, San Francisco 2, Calif.; Hubert L. Williams, 11 East Third Street, Hinsdale, Ill.

Your Secretary has kept out of mischief this winter as a member of the finance committee of the town of Lancaster and also by playing a little ice hockey week ends to keep in shape; and outside of a few bumps and bruises, which eventually clear up, he is none the worse for wear.—HERBERT L. HAYDEN, Secretary, E. I. du Pont de Nemours and Company, Leominster, Mass. ALBERT S. REDWAY, Assistant Secretary, 47 Deepwood Drive, Hamden 17, Conn.

1924

Nothing like a reunion mailing to bring a response from you gentlemen. As a consequence of that first announcement, we're loaded. It will probably be a long time before this happens again, so we'll hoard a few for future columns. Herewith, the first installment.

We won't go into any detail on the reunion itself, since you who are coming or have asked for further mailings will get the news directly. Suffice to say this one is going to be a corker. Early registrations include a lot of names of men who have not been to previous affairs of this sort, and with few exceptions most of us will be accompanied by our wives.

George Jones is going to be really busy this year. Seems the island of Nantucket is having a big celebration. July 2 is its 300th birthday; but things started on January 15 with a birthday card contest, go right through until the end of the tourist season on September 16. And George is general chairman. Here's just a sampling of the varied fare he is pro-

viding: an "endless" birthday cake; Veteran Motor Car Club meet; sheep shearing festival; whaling seminar; lots of square dances and band concerts; air-sea rescue; firemen's muster; fly-in of antique planes; conference on "Man in Space"; family reunions galore. There are lots more. If you'd like a line-up, write: George W. Jones, Easton Street, Nantucket, Mass.

Frank Reeves is getting to be an almost-professional writer. The March issue of *Power* had an article by him on solenoid valves. It's his 56th magazine article! He also writes a weekly column for a local (Los Angeles) publication called the "Gee Whiz Department." For two years Frank was president of the Engineers and Architects Institute, now heads the Los Angeles chapter, California Society of Professional Engineers. There are many other offices and committees, but they still leave him enough time to be district manager of Automatic Switch Co. for southern California. And for those who understand the intricacies of such things, Frank also "works out" on a Wurlitzer Model 4600 organ with Leslie speaker, Vibrachord, and a Tom Thumb piano as accessories. "I can fool anybody except a pro that I can really play the organ." He rents a studio at 1277½ Sunset Boulevard with room for about 20 people, and will welcome any organ-minded classmates at any time.

Then there's Ike Walton who came to M.I.T. from Haverford along with Bill MacCallum and Ted Taylor. Reason for the mass exodus is not quite clear. Ike (Kenneth B.) runs Kents Restaurant and Baking Co. in Atlantic City. This is a \$600,000 corporation with six stores, several restaurants, a bakery, and a candy making plant. Maybe you remember we've mentioned his fascinating address—Sand Dune Shanty, Brigantine, N.J. It's no shanty, we understand, and Ike would love to have any of you who can negotiate the five-mile ocean voyage drop in "to sample its hospitality when you come to Atlantic City, as everyone should do, often." Ike is a man of diverse interests and accomplishments. He's been at sea as a radio operator; in the oil business both here and abroad; became a flier in England; was vice-president of Fleetwings, Inc.; spent much of the thirties in Washington; helped Republic produce P-47's during the war; then came back to the food business he'd started away back when. Ike's line-up of committees and community jobs is as long as your arm, including, as you can well imagine, the Miss America Pageant.

Very sorry to have to report that Frank O'Neil was laid low with a serious heart attack in January. It was a coronary occlusion and for some time he was in oxygen. Last report (this is a month later) is that he is recovering nicely. Several address changes, much better than Frank's which has been "Presbyterian Hospital" for some time. Fred Westman has moved from Milton to the north shore. He's now a resident of Rockport, that seacoast town which has leaped to fame through the idyllic writing of the 1926 secretary. A new

Catholic church of Fred's design has just been completed in Lexington. "Restrained modern," you might call it. Fred Reed, long an Eastman Kodak stalwart, must have retired. At least he's left frigid Rochester for balmy Winter Haven, Fla. Norris Johnston has been in California ever since he got his Ph.D. at California Institute of Technology, in recent years as president of Petroleum Technologists, Inc. Don't know whether or not California oil is running out, but he's now moved to Dallas.

Probably some of the Naval Architects will remember Henry F. Bertherman. He was with us only a short time in our sophomore year. Word has just been received of his death a year ago. Another note on the sad side: "Mrs. Margaret Carr Scott, wife of Preston H. Scott of Bloomfield (N.J.), died yesterday in Community Hospital, Montclair, after a brief illness." The sympathies of the Class go to Scottie.

From Mike Amezaga comes the first word from any of our classmates in Cuba since the recent upheaval: "You already know we finally got rid of Batista and his henchmen and God and Mr. Castro willing I'll see you at the Cape. I think Mr. Castro will let me go, since I've heard his brother Raúl just married an M.I.T. girl, the former Miss Vilma Espin." Mike is correct. You may have read about her in *Life*, where she was identified as political adviser to brother Raúl's forces. The young lady graduated from the University of Orienta in Cuba and was here for a year doing graduate work in chemical engineering.

Mal and Barbara MacNaught had themselves a time last fall. They took the first Pan American jet flight to Paris, toured Switzerland and Italy, and were in the group given the first audience by Pope John. Mal is now McGraw-Hill's associate district manager in New York.

Bob Dehlendorf won't be with us at reunion, but he's already been to one 35th, at the Naval Academy. One of his classmates, in fact his battalion commander, was Carleton Shugg, now the nuclear submarine expert at General Dynamics. Bob may have a son headed this way in another few years. His first two went elsewhere. From Hap Stern comes a business card: "I. Henry Stern, consulting engineer, contract consultant—formerly the contract engineer and executive assistant of the Massachusetts State Public Works Dept." Hap will straighten out claims, extra work, changes, disputes, and so on. Colonel Stern got a law degree after M.I.T. His three children have all graduated from college by now and he has three grandchildren. Another three-time grandfather is Richard F. Shea. Dick's youngest daughter is planning to be a teacher, maybe a sign (this is Dick's idea) of inherited insanity? As a consulting engineer at General Electric's Knolls Atomic Power Laboratory, he spends his days scrambling neutrons and electrons.

A year ago Dick Lassiter gave a paper at the National Crushed Stone convention in Chicago. Must have been good, because he was asked to do a repeat in September at the American Mining Con-

gress in San Francisco. The paper, "New Trends in Plant Design," was principally concerning copper and uranium ore concentrating plants. As an increasing number of us seem to be doing, the Lassiters spent a couple of weeks in Florida this winter. One man who doesn't have to go south in the winter is Courtney Benedict, who is a chemistry professor at Chico State College in California. He has one "congenital defect that seems fairly common, an inability to say NO!" As a consequence he has all sorts of odd jobs. Among them are: chairman of the Faculty Council at Chico; president of the local society of Sigma Xi; and on the National Council, American Association for the Advancement of Science. He relaxes with high fidelity and has a pronounced preference for jazz of the 1924 era. He's not alone there, especially when you hear all the ones today's singers are digging up. So much for now. Lots of intriguing dope left. More of it next month.—HENRY B. KANE, *Secretary*, Room 1-272, M.I.T., Cambridge 39, Mass.

1925

June of 1960 will be here before we know it, so it is time to begin planning for the 35th reunion. As mentioned a couple of months ago, Henry McKenna is chairman of the 35th reunion committee; and Mac is not losing any time getting into action. He has already been in touch with several of the better vacation hotels on Cape Cod; and it looks now as though the reunion will be held at the Chatham Bars Inn on the outer elbow of Cape Cod, where the Atlantic Ocean begins, starting during the afternoon and evening of Friday, June 10, and running through Sunday, June 12, 1960. With the new highways already open and newer ones promised prior to June of 1960, the trip down to Chatham is quite easy by automobile. For those interested in flying in by commercial airlines, there is a busy commercial airport at Hyannis only about 20 miles away. For people like George McDaniel who want to fly their own planes in, arrangements can very likely be made to use the rather fine airport in the town of Chatham; and for those like Bob Ashworth who want to come by sea, the boats can be tied up almost in front of the Bar's Inn. More detailed news as the months go by, but start making your plans now.

Through the kindness of J. N. Stephenson '09, word was received that Raymond M. Treuil, Course XV, commercial and financial counselor to the French Embassy in Ottawa, was a member of a panel for the discussion of trade and relations between Europe and Canada at a conference of the Business Paper Editors Association on January 23, 1959. He gave a most interesting and helpful explanation of the Benelux Pact, European Common Market, and the Free Trade Area. Other speakers represented Great Britain and West Germany.

Charles Cooper was at the Institute a few weeks ago attending an all-day seminar on Management of Research conducted by the School for Industrial

Management under the auspices of the Industrial Liaison Office. He dropped into my office and we had an enjoyable one-half hour get-together.

Among the address changes received during the past month, one is of more than passing interest in that it indicates that John G. Dempsey is now located in Hinsdale, Ill. His previous address was Bachaquero, Estado Lúbia Venezuela. — F. L. FOSTER, *Secretary*, Room 5-105, M.I.T., Cambridge 39, Mass.

1926

There's big news for our class notes this month: our Class President has done it again. Standard Oil Co. (New Jersey) has announced the election of David A. Shepard as executive vice-president and a member of its executive committee. We are not surprised, but we are proud. Ever since your Secretary first met Dave in the fall of 1922 while standing in line at the Bursar's Office, it was obvious that Dave was slated for greatness. Congratulations from the Class to Dave.

Through a mutual friend we recently learned that D. K. Luster has retired from active business and is living in Sharon, Conn. Retirement in this case, as we got the story, means that Dwight is building large houses and selling them for more than they cost to build. This sounds like an interesting kind of retirement. Another classmate, Nat Gada, has written us from Sarasota, Fla., that he, too, has retired. Why don't we tell you about it by quoting Nat's letter: "Dear George: I retired from the General Electric Co. in August and moved here in July, since I had vacation time coming. Since my retirement (because of health), I have been enjoying the life of a country gentleman. I have very little to do and a lot of time to do it in. Seriously, I never dreamed that I would enjoy a life of leisure so much. Believe me, I recommend it. I read your class notes of January this morning and I certainly enjoyed them. Now a little about Sarasota. Mabel and I chose this town because it is a quiet cultured town (small) but has all the large city inducements. The weather here has been very good. We had two days of cold weather a couple of weeks ago. The temperature went down to 30 degrees one night and only got to 65 degrees the following day. Outside of those two days, it has been in the 50's at night and 70's in the daytime. I follow the weather very closely now, and I certainly feel sorry for you in New England. Do you ever get down this way? If you do, be sure to look us up. The welcome mat is always out for good old '26 — especially you and your charming wife. May 1959 be a good year for you, George. Regards to the '26 family from the Gada family. Nat Gada."

We have received a news release about Pete Doelger which tells its own story, so we shall quote: "William E. P. Doelger was elected to the board of trustees of the Manhattan Savings Bank, it was announced by Willard K. Denton, President. Mr. Doelger is president of Peter Doelger, Inc., and subsidiaries, which have been prominent in real estate own-

ership, management, and construction in the metropolitan area. Peter Doelger, Inc., sponsored the building of 36 Sutton Place, the first new apartment in the area after World War II. They subsequently built 20 Sutton Place, a modern luxury co-operative, and developed the block bounded by Sutton Place and First Avenue, 55th to 56th Street, with five apartments of 600 units arranged around a central tennis and skating area." Congratulations, Pete!

Another news release tells of a new assignment for Leonard Milano: "Leonard Milano, a director of Quebec Natural Gas Corporation, has been appointed executive vice-president and chief executive officer of that corporation, according to an announcement by Colonel Maurice Forget, President of the company. Mr. Milano succeeds Kenneth B. Lucas '32, who is resigning to enter the consulting field. He will continue with the company as a consultant and a member of the board of directors. Mr. Milano has been a director since the corporation began business in 1957. Before assuming his present position, he was vice-president of Commonwealth Services, Inc., international management consulting and engineering firm of New York." Best wishes from the Class, Leonard!

From the factual reporting nature of this month's issue of class notes, you have probably guessed that they are not being written at Pigeon Cove. We have missed a week end at Pigeon Cove due to a minor illness which nearly turned into a major catastrophe. The other evening your Secretary landed at the Logan Airport in East Boston after a four-day business trip with a grippetype cold and several degrees of temperature. The dulling effect of the grippé resulted in his losing control of the Volkswagen on the drive home from the airport, and it flipped over. Thanks to a gadget known as a seat belt plus an overabundance of good luck, we stepped out unharmed. However, we did spend the week end in bed instead of at Pigeon Cove; and this accounts for our lack of monthly anecdotes from there. We will do better by you next month. Until then, Cheerio. — GEORGE W. SMITH, *Secretary*, c/o E. I. du Pont de Nemours and Company, 140 Federal Street, Boston 10, Mass.

1928

Our capable classmates continue to make news. Leo J. Myskowski, Course VI, has been named a vice-president of Jackson and Moreland, Inc., as of August 1, 1958. After graduation Leo spent a year with the Brooklyn Edison Company as a junior engineer. Then for eight years he was with another prominent utility, now Niagara-Mohawk Company, as mechanical engineer for design of large power plants. He has been with Jackson and Moreland since 1937, principally as a project manager on power plant and boiler assignments for a number of utility and industrial clients, in the United States and Puerto Rico.

Roland D. Earle, who for many years was president of Union Bay State Chemical Co., Inc., of Cambridge, Mass., has

now become distinguished for a patent leather coating he developed. According to a recent newspaper account, the new coating will be a large sales item to be produced at a new plant of the Colonial Tanning Co., Inc., at Canton, Mass.

Our respected class secretary, George Chatfield, has been appointed senior vice-president, director, and member of the plans board of Benton and Bowles, Inc. Formerly George was executive vice-president of William Esty Co. Advertising has been George's professional activity ever since he graduated from the Institute in Course XV-2.

To each of you, gentlemen, our sincere congratulations and very best wishes! — RALPH T. JOPE, *President*, Room 1-276, M.I.T., Cambridge 39, Mass. WALTER J. SMITH, *Assistant Secretary*, 15 Acorn Park, Cambridge, Mass.

1929

Again this month the main news item is the upcoming 30th reunion at Bald Peak in June. By the time you read this, you will have received the second letter, which has firmed up the attractions for the reunion. As we go to press, we, of course, have not had replies from the second mailing; and therefore there are no changes to report in the "Plan to" and "Hopeful" lists as last published in the previous issue and in the second mailing. Again your committee wishes to stress that the 30th will be an informal "do as you wish" affair with ample facilities to keep you as busy as you wish. Golf tournaments are planned for those who wish, as are putting tournaments for the ladies. There are tennis courts, shuffleboard courts, softball field, boats for hire, fishing licenses at a nominal fee (and fish, they say). The high lights are Gales' cocktail party on Saturday evening followed by the banquet and dancing on the terrace to Ken Reeves's orchestra, the lobster lunch on Sunday followed by the cruise around Lake Winnepesaukee. We plan to break up early Monday morning so that those who plan to attend President Stratton's inauguration and the Alumni Day functions can make Boston in due time.

We hope by the time you read these notes that you will have returned your questionnaire indicating "Will attend" the reunion. This goes for the "Plan to's" and the "Hopefuls." As we have said before, Bald Peak is a grand spot for a relaxing week end. The food is superb, and we are all looking forward to renewing old friendships from the 25th and before.

Two items of news in the press: from the *New York Times*, Ed Tittmann has been elected vice-president and director of American Smelting and Refining Company. Earlier in the year, Ed had been elected chairman and chief executive officer of Southern Peru Copper Corporation operating in Peru. He will continue in that post. Ed has been with American Smelting since graduation.

And from White Plains, N.Y., the announcement that George White has been appointed to the position of assistant general manager of operations of the

Birds Eye division of General Foods Corporation, in which position he will be in charge of production management, scheduling, and engineering; quality control; horticultural research; and purchasing. George joined General Foods in 1929 at the Minute Tapioca plant here in Massachusetts, and since then he has held a number of operating positions in the States and Canada. For several years he was vice-president of Production of General Foods, Ltd., the Canadian subsidiary. More recently he has been plant manager of the Maxwell House division of General Foods.

Best wishes, and we are looking forward to our get-together in June. — FISHER HILLS, *Assistant Secretary*, 62 Whittemore Avenue, Cambridge 40, Mass.

1930

We received a note from Bill Alling, Jr., recently. From 1930 to 1947 he worked for Industrial Rayon Corporation, serving in various capacities, finally as production staff engineer. In 1947 he left that corporation and entered Faith Theological Seminary, which was then in Wilmington, Del. He graduated in 1950 with the degree of B.D., and was for several years the pastor of the Bible Presbyterian Church of Canon City, Colo. Since September, 1957, he has been at the Cono Christian School in Walker, Iowa, where he teaches mathematics, science, Bible, and so forth.

Charlie Anderson wrote that he has been a long lost member of the Class of '30, and was glad to hear from us. He lives in Lynnfield Center here in Massachusetts and is a consulting engineer on nuclear vessels, missile test stands, the Welding American Society of Mechanical Engineers Code, and so forth. His hobbies are experimental loadings for Garand Rifle M-1 and target shooting competitions.

In the May, 1956, issue of *The Tech Review* we reported that John Parmakian was head of the Technical Engineering Analysis Section, U.S. Bureau of Reclamation, Denver, Colo. We recently heard from John again in answer to our letter of inquiry, and he told us that his position was still the same; but he gave us more information as to what his job entails. His section does all the high-brow engineering for the Bureau on complex engineering problems in the fields of civil, mechanical, and electrical engineering. John's military activities consist of commanding officer, 5002d Army Research and Development Unit, Colorado, and he holds the rank of colonel in the Army Reserves in the Corps of Engineers. As to professional activities, he is currently chairman, Hydraulic Division, American Society of Mechanical Engineers; member, American Society of Civil Engineers; member, U.S. Commission on Large Dams.

Ralph Peters sent us a note to say that he ran into Phil Holt while attending a winter week end at the Skytop Club, and had a long talk with him about old times. Ralph's second son, who was graduated from Princeton last June in the same class as Herm Botzow's son, was married on

December 27 to Miss Cynthia Thompson of Pittsford, N.Y.

Nat Rand has been with E. I. du Pont de Nemours' Engineering Department as design engineer since early 1951. He has two children, both through college, and says that he is still happily married after 28 years.

Stan Russell dropped us a line to say that he hasn't got much money, but he's reasonably contented with his lot. He operates a first-class painting concern; and here at M.I.T. he has painted the Kresge Auditorium, the Chapel, the Compton Laboratories, and is now working on the new Du pont Gym. Stan tried his best to interest his boys in the "Glorious Institute"; but the older is now a junior at fair Harvard, and it looks as though the younger is heading that way next fall. Both boys enjoyed their stay at Belmont Hill School, and were honor students. "Somehow or other," says Stan, "engineering is not the way of life in the Russell household, particularly for the generation that followed us."

In a Springfield, Mass., news release of December 26, 1958, we read that the 1959 school building architectural exhibit had accepted an exhibit by our classmate, Elroy Webber, to be shown at the National Convention of the American Association of School Administrators in Atlantic City, N.J., February 14 to 18, 1959. This exhibit depicted the new eight-room addition to the Sixteen Acres School in the Springfield, Mass., area.

We have the following address changes to report: Reverend William M. Alling, Jr., Bible Presbyterian Church, Walker, Iowa; Alan C. Bemis, Westford Road, Concord, Mass.; Carl F. Brauer, R.D. #2, Princeton, N.J.; John J. Byrne, 24 Park Street, Barre, Vt.; Richard N. Chindblom, 5 Morley Lane, Darien, Conn.; Gilbert L. Cox, Whitehead Metals Inc., 181 Winton Road North, Rochester 10, N.Y.; Thomas M. Emery, 975 South Hunter Boulevard, Birmingham, Mich.; Miss Mary E. Forsberg, 1033 Graydon Avenue, Norfolk 7, Va.; Dr. Paul F. Hahn, 5400 Hillsboro Road, Nashville 12, Tenn.; Royce G. Kloeffer, 4201 Massachusetts Avenue Northwest, Washington 16, D.C.; Paul R. Konz, Foster Wheeler Corp., 666 Fifth Avenue, New York 19, N.Y.; Everett C. L. Kroehler, Box 54, Naperville, Ill.; David Landen, 6224 North 29th Street, Arlington 7, Va.; Robert M. Nelson, 4650 Moore Street, La Crescenta, Calif.; Constantine G. Orfanos, International General Electric Company, Room 104-8, 150 East 42d Street, New York 17, N.Y.; Horace B. Preble, P.O. Box 233, Salem, N.J.; Raymond G. Rolin, 539 Borchard, Ventura, Calif.; Irvine E. Ross, Jr., 4115 Spanish Terrace, Fort Wayne, Ind.; Allan H. Stone, 2165 Valentine Road, Westbury, N.Y.; George B. Thorp, 24 Wildwood Road, Larchmont, N.Y.; Abraham S. Uman, 8 West Merrick Road, Freeport, N.Y.; Thomas R. Wigglesworth, Route #8, Alexander Road, Bedford, Ohio; Ellsworth Wyman, Box 104, Dolgeville, N.Y. — GEORGE P. WADSWORTH, *Secretary*, Room 2-285, Department of Mathematics, M.I.T., Cambridge 39, Mass. — RALPH PETERS, *Assistant Secretary*, 249 Hollywood Avenue, Rochester 18, N.Y.

1931

It was a pleasure to run into Bill Dickerman recently at an M.I.T. luncheon. Since he was in the Class of '30, rather than '31, he was little dubious about giving us any news for publication in these notes; but we did find out that he is now back in the United States after having spent a number of years as sales engineer for the Lummus Company in London.

Congratulations are due Don Holden, who has recently been elected vice-president of Newport News Shipbuilding. An article in the January, 1959, *Maritime Reporter*, forwarded to us by Philip Mandel of the Institute, contains the following information about Don: "He has held a number of responsible positions during his 25 years of service with the shipyard. He was first employed in 1934 after his graduation from Massachusetts Institute of Technology with a degree in civil and general engineering. He worked progressively in the Machinery and Piping Design Departments, and was promoted to a junior design supervisor in 1940. In 1948 he was made assistant chief engineer, a position that made him assistant head of the Machinery Design Division. He was named chief engineer in charge of the Machinery Design Division in 1954."

Congratulations also to John Hollywood, who is with Columbia Broadcasting System Laboratories in Stamford, Conn., on his election to the presidency of the Connecticut subsection of the Institute of Radio Engineers.

A clipping from the *Houston (Texas) Chronicle* for December 5, 1958, brought news of Carrington Mason. The article is quoted in full, since it will be of interest to all who know him: "On a voyage across the Atlantic to Europe as a teen-aged deck boy on a merchant ship, Carrington Mason, now an executive of the Houston Natural Gas Corp., decided to become an engineer.

"When not on watch or polishing brass, young Mason was mixing with the black gang, or engine crew, and listening to the hum of the engines, which was music to his ears. In a severe tropical hurricane beyond the Florida coast he saw how the sound engineering design of the ship saved it from disaster. Previously Mason had enjoyed his work with surveying crews of the City of Memphis and the Tennessee Highway Department during high school vacations. And as a Boy Scout qualifying for the Eagle rating, he learned he had an aptitude for constructing things. Now, after having graduated from one of the nation's leading engineering colleges and gaining experience with several major industrial firms, Mason is the newly chosen president of the influential 1,200-member San Jacinto chapter, Texas Society of Professional Engineers. This means an unusually busy year ahead for him in addition to his regular duties as assistant vice-president of operations of the Houston Natural Gas Corp. Mason studied electrical engineering at the University of Tennessee for two years. Then he changed to mechanical engineering studies at Massachusetts Institute of Technology, where he did postgraduate work, partly on an Alfred P. Sloan Fel-

lowship. Later he attended the Harvard University School of Business Administration.

"For a time he was on the M.I.T. staff. In his early career, Mason was a maintenance engineer with the Sheeptanks Consolidated Mines in Arizona. He has done engineering work for Converted Rice in Houston; Buckeye Cotton Oil Co. in Memphis; and Ingersoll Milling Machine Co., Rockford, Ill.

"Mason has long been esteemed by fellow members for his enthusiastic committee work for San Jacinto chapter, and was the unanimous choice for 1959 president. The chapter will be host in January to the society's state convention. He is identified also with the Houston chapter, American Institute of Electrical Engineers; the Houston Engineering and Scientific Society; the M.I.T. Club of Houston; the Harvard Business School Club of Houston; the American and Southern Gas Associations; and the Texas Mid-Continent Oil and Gas Association. He is an elder in St. Andrews Presbyterian Church. Mason served as a naval officer in World War II. His duties were mostly at New Orleans, La., and Houston, Texas.

"After joining the Houston Natural Gas Corp. in 1949, then 42 years old, Mason served first as industrial engineer, then as acting general sales manager and as executive assistant. He became assistant vice-president in 1955. Mason is married to the former Dorothy Trout of Sugar Land. They have two daughters, Elizabeth and Mary, and the family lives at 3710 Drummond."

I has the pleasure of attending the February luncheon of the Class of '31 at the M.I.T. Club of New York but missed seeing Marcel Aillery, who was away that week, attending the American Society of Civil Engineers convention in Los Angeles, which was to be followed by several weeks of business on the West Coast. Horst Orbanowski pinch-hit as chairman, and it was good to see him again. He said he spent a week end this winter at Mt. Snow, trying to change his style over to the new Austrian style, after skiing for 40 years using the Arlberg school technique. He says the Austrian style looks easier than the Arlberg, but fears he started it too late.

Also ran into Lester Steffens, of the Class of '30, at a recent M.I.T. luncheon. Lester, who is with Socony Vacuum, went back to school for two weeks last summer and took Professor Jay W. ('45) Forrester's course in industrial dynamics. It looks as if he is going in for education again in a big way, after some 30 years. In addition to taking Professor Forrester's course, Lester has been reviewing the science curriculum of the Darien (Conn.) schools and also promoting a science seminar under the auspices of the American Chemical Society.

Enjoyed seeing Charlie Terwilliger again recently. Charlie, who is with MacFadden Publications, acquired a 400-day clock some years ago and, apparently, had trouble getting it repaired. Unlike so many of us, Charlie decided to do something about it. As a result, he found out how to repair the 400-day clocks, wrote a book on the subject, entitled the *Horolov*

var 400-Day Clock Repair Guide, which is now going into its fourth edition. Now, Charlie is stocking the repair parts for these clocks and has nine people working for him repairing them. According to reports, he is the largest importer of repair parts in the country for these clocks. In case you are interested in obtaining a copy of his book, write to the Horolov Company, Bronxville, N.Y. The price is \$3.95.

You will all be as sorry as I was to learn of the death of George A. Pippy on August 11, 1958. You will recall that George was with Imperial Oil Ltd., in Halifax, Nova Scotia, and was a widower, his wife having died only four years after their marriage, which took place while he was still at Tech.

Address changes received since our last Class Notes are as follows: Curtis B. Brown, 2008 Sunrise Rim Road, Boise, Idaho; Frederick C. Eaton, Jr., P.O. Box 104, Serve Colorado, Aruba, Netherlands West Indies; John N. Fricker, The Beal, Woodbury, N.Y.; Rear Admral Cato D. Glover, Marion Institute, Marion, Alabama; John K. Jamieson, International Petroleum Co., Ltd., 396 Alhambra Circle, Coral Gables 34, Fla.; Edward H. MacKay, Jr., 2655 Clay Street, San Francisco 15, Calif.; Robert Sanders, Apartment 116, 4501 Connecticut Avenue Northwest, Washington 8, D.C.; Frederick J. Turner, 96 Rockland Street, Swampscott, Mass.; Edward R. Toporeck, P.O. Box 642, Santa Barbara, Calif. — EDWIN S. WORDEN, *Secretary*, 9 Murvon Court, Westport, Conn.; GORDON A. SPEEDIE, *Assistant Secretary*, 90 Falmouth Road, Arlington 74, Mass.

1933

Best wishes from all the Class to Dorothea Shanney, VII, who has become Mrs. Francis H. Hagan. Dorothea is now living in Brockton; she formerly lived in Milton and was associated with the Somerville school system. Honors again this month to Don Fink, VI, for receiving the first technological award of the year of the New York Institute of Technology for "outstanding contribution by a scientist in industry toward improving technological training standards."

We welcomed word from Emerson Cummings, II, reported last month as moving to San Francisco. His is an A.P.O. address, which covers the vast Pacific area. Specifically, Emerson is a lieutenant general serving as deputy commanding general of the Eighth Army, with headquarters in Seoul, Korea. Prior to leaving the States, Emerson served for 10 years in the Pentagon, the last four as chief of ordnance. Before devoting all of his time to his present assignment, he served also as commanding general of the U.S. Army in Japan. Speaking of the military, the Los Angeles *Examiner* reports on the 60th birthday of the Los Angeles District, U.S. Army Engineers, currently under the command of Colonel Carroll T. Newton, IV-A and I. With a total complement of 1,350, the District supervises 125 major military construction projects and 15 flood control contracts in 7 western states, covering 345,000 square miles. Carroll has been either regular or reserve

in the Army since '33 and served with the Far East Command during World War II. We are happy to report that Carroll drops in at Tech periodically and retains an enviously youthful appearance despite his responsibilities.

Ted Neubauer, II, reported last month as having moved to Sidney, Ohio, has written interestingly about his position as vice-president in charge of engineering of Copeland Refrigeration Corporation in Sidney. Previously with York and later with Trane, Ted served with the Manhattan District during the war, dealing with pumps handling uranium hexafluoride. Ted joined Copeland a year ago and is now thoroughly immersed in his research and development programs.

We have had word, too, from Alvah Raymond, VIII, who is in Chapel Hill, N.C., for a year as a National Science Foundation fellow at the University of North Carolina; the objective of the N.S.F. program is improved teaching of secondary school math and science.

Recently, we had the pleasure of an all too brief visit with John Rumsey, III, in Detroit at the M.I.T. Regional Conference. John is chief engineer of the Jervis B. Webb Company. As for youthfulness, John could pass easily for a senior at Tech.

Here are the moves reported to us during the last month; how about a brief report on your new activities that you can share with your friends through the class notes? We would certainly welcome hearing from you. J. Mason Culverwell, III, from London, England, to New York City; Maurice W. Kleinman, IV, from New York City to Coral Gables, Fla.; Leighton R. Rickards, XV, from Pleasantville, N.Y., to Eau Gallie, Fla.; Captain John H. Spiller, XIII-A, from Bath, Maine, to Marion, Ill.; Norman P. Spofford, I-A, from Idaho Falls, Idaho, to Hamilton, Ohio; Brigadier General L. Van Syckle, II, from A.P.O. New York City to Washington, D.C.; and after one month to Los Angeles, Calif.; Richard F. Zimpel, VI-A, from Canajoharie, N.Y. to Wellesley Hills, Mass.; Captain Allen M. Zollars, XIII-A, from Bay City, Mich., to Edwardsville, Ill.

With the mud season behind us, hope you all have a pleasant spring. — R. M. KIMBALL, *Secretary*, Room 3-234, M.I.T., Cambridge 39, Mass.

1934

The big news this month is our 25th reunion — now only 60 days away. The reunion committee was busy in February when these notes were prepared, and by April the detail plans should be completed.

Our last January general mailing brought in many more of the personal histories for the reunion book. Two hundred eighty-two (282) histories and sixty-seven (67) pictures are now in hand, and we should have many more by the time you are reading these notes.

The surprise to all of us on the reunion committee was the interest shown in children attending the reunion, and the number already totals ninety (90). The children's subcommittee of the reunion committee has had to revise its planning,

and we will try to have the best of professional assistance in providing an interesting and quite separate program for children of various ages. We plan to make no provision for preschool children (or grandchildren), but any age from seven up will be welcome.

Early returns show about one hundred (100) classmates will attend with about eighty (80) bringing wives. We are still planning on a basis of one hundred fifty (150) classmates attending and would like to see it two hundred (200).

If you have not already done so, please make your reunion intentions known to your reunion committee. — MALCOLM S. STEVENS. Secretaries: WALTER MCKAY, Room 33-217, M.I.T.; MALCOLM S. STEVENS, Room 1-139, M.I.T., Cambridge 39, Mass.; JOHN A. HRONES, Vice-president for Academic Affairs, Case Institute of Technology, University Circle, Cleveland 6, Ohio.

1936

Our classmates must be reaching that age where "moving about" is catching up with a great number of them. For some time now the change of address notices have been increasing in number. Luis Emilio is now at 8930 Heraldy, San Diego 11, Calif. Jacques LaFlamme has joined Carbide Chemicals Company, 1425 Mountain Street, Montreal, P.Q., Canada. Max Garber has moved to 119 Payson Road, Chestnut Hill 67, Mass. Scott Rethorst is at 557 Drexel Place, Pasadena, Calif. Lou Wetmore's new address is 907 South Busey, Urbana, Ill. Tom Terry has moved to the Chatham Apartments, 509 Abercorn Street, Savannah, Ga. Harry Raddin is now in Richmond, Va., at 1906 Parma Road. Captain Ernie Holtzworth can be contacted through the U.S. Naval Shipyard, Navy #128, F.P.O., San Francisco, Calif.

Even our Class President Jack Austin has moved. Jack has deserted Chicago for Darien, Conn., 116 Colony Road. Jack writes: "For six weeks before moving here, I commuted back and forth between Chicago and New York — a commute, by the way, which is much too wearing. The week ends in Chicago seemed to be lost ones, and the weeks down here became almost as bad. We moved in early December; and less than a week later Beaty's father passed away quite suddenly, so we were back in Chicago for better than a week winding things up there. Then Christmas — which obviously was quite a rat race this year. The day after New Year's, I checked into Harkness Pavilion, where I spent the whole month of January flat on my back. I had postponed what I knew was coming as long as I could; but during the Christmas holidays, I found that I could no longer stand up (which is akin to suicide at cocktail parties) and that I could no longer walk more than a few steps. So I knew the time had come — and three doctors had a real field day with me. I had five vertebrae fused, and the discs in between trimmed off so that they would stop bothering the nerve column along the spine. But I'm up and around for a few hours at a time and feeling a whole lot better — in spite of the steel contrap-

tion I am wearing night and day. It's so good to be in vertical position for a change that I don't even mind this contraption, which surely was devised by the devil himself.

"I guess I did tell you that the reason for my move was that I had been appointed national advertising sales manager — which, in the light of subsequent events, is really ironical. We do not have any accounts in Darien, and I certainly will not be doing any real traveling for some time to come. New York address is still the same: Time — Life Building, New York 20, N.Y., JUdson 6-1212."

Hank Lippitt, whose latest business address is Southern California Gas Company, P.O. Box 3249, Terminal Annex, Los Angeles 54, Calif., writes: "I saw Brent Lowe off on a two-month trip to Australia via Tahiti and New Zealand, with stopovers at Suva on the Fiji Islands and Pago Pago on Samoa.

"When I left him on board the Matson Line *S. S. Monterey*, his next stop was Papeete, Tahiti, where Brent had a whole series of addresses of interesting people to look up — acquaintances of his La Jolla friends. After that, he goes on to New Zealand and Australia, enacting, I am afraid, only enough 'business' to qualify the trip as 'ordinary and necessary' for purposes of the Internal Revenue Service. Brent has been working successfully with his real estate investment firm in La Jolla, Calif., for the past several years; he is taking this opportunity to get away from the scene for the first well earned vacation in a long time. Brent got on board the *S. S. Monterey* in San Francisco after having lunch and visiting with Al Horton and Bob Hannam there.

"As far as my own reports are concerned, I have to say that it is pleasant being back in California again. My work with Southern California Gas Company, principally in the field of public utility regulations, involves a fair number of trips to Washington, D.C., to present the problems which we have before the Federal Power Commission. They are, however, interesting and challenging. The only difference between California and New York, in this respect, is that there are not so many people who are experts in the field in California to second guess me on my decisions!

"This summer I had a trip overseas, stopping off at the International Bar Association Convention in Cologne for several days before visiting the Brussels Exposition, and going on from there for a look behind the Iron Curtain in Warsaw, Poland, plus a week's trip through Yugoslavia, visiting the capital, Belgrade, and taking the boat along the Adriatic from the city of Dubrovnik to Split, the town founded by Emperor Diocletian. The fun part was finding out that there was a group of Lippitt cousins living in Austria, stemming from one great-great uncle Lippitt who went over as consul to the court in 1853. Part of the family was still living in a fairly presentable castle near Graz!" Thanks very much, Hank; you are still the Class's greatest news hawk.

Bill Hewlett was recently named a Mills College trustee. Bob Woodward won the 1958 Theodore W. Richards Medal for conspicuous achievement in chemistry.

One of the staff leaders and specialists participating in a one-day conference on Application of Statistics to Experimentation at the Sheraton Plaza Hotel, Boston, was Dorian Shainin. Dorian, Director of Statistical Engineering, Rath and Strong, Inc., has introduced random balance methods in a wide variety of research, engineering, and manufacturing organizations. The conference was sponsored by the American Chemical Society.

Marshall Christensen's new business address is 558 Madison Avenue, New York 22, N.Y. Norm Copeland's latest address is P.O. Box 67, Montchanin, Del. Alden Anderson has moved to 146 Atlantic Avenue, Marblehead, Mass. Henry Runkel is now at 17560 12th Street Northwest, Seattle 77, Wash. Bill Peters is located at Lower Mountain Road, R.D. #1, Lockport, N.Y. Ray Woodrow has moved to Princeton, N.J., R.D. #11. Jim O'Neil has moved right in between Jack Austin and Yours Truly — Malvern Road, Stamford, Conn. — JIM LEARY, Secretary, One Putnam Park, Greenwich, Conn.

1937

Al Reinhardt has been promoted to development engineer by Hamilton Standard, division of United Aircraft Corp. Al lives at 1269 North Main Street, West Hartford, Conn. Frank E. Goddard, Jr., presents the results of an experimental program carried on in the 18 inch by 20 inch supersonic wind tunnel of the Jet Propulsion Laboratory at California Institute of Technology to determine the "Effect of uniformly distributed roughness on turbulent skin-friction drag at supersonic speeds," in the January issue of the *Journal of the Aero-Space Sciences*. Gil Mott has been elected vice-president in charge of engineering at the Bridgeport Brass Co. Gil, his wife Rosemary, and their three children live at 95 Sycamore Lane, Fairfield, Conn. Sid Levine conducts his own business as a technical writer, doing free lance article assignments and literature searches. He recently prepared a reference list on "Chemical References" for the *Publicity Record*, which is a guide for the publicity-public relations field. Sid's address is 831 Linden Avenue, Elizabeth, N.J. In the latest Chi Epsilon newsletter, Eric Moorehead reports that he is a structural engineer in Berkeley, Calif.; that he has one son at M.I.T. and another son who is a "scratch handicap" at golf (may turn "Pro"); and also that he has two daughters in high school. Your son, Eric, is the first offspring of one of our Class whom I have had the pleasure of reporting as attending M.I.T. Congratulations.

It is with great regret that we report the death of Cleon C. Dodge in January, 1959. Cleon was a sales engineer for Greer Hydraulics, Inc. He graduated from Command and General Staff School at Fort Leavenworth, Kansas, in 1945. From 1942 to 1945 he was an instructor in mechanics at the United States Military Academy. Our sympathy goes to his widow, the former Mary Louise Edwards; his two sons, Cleon E. and Carter P.; and his father, Cleon O. Dodge.

The latest Directory of the Alumni Association lists many of our class members

in different positions. Phil Peters, our Class President, is our class representative on the Council along with Tom Kinraide and Ralph Webster as Council representatives of M.I.T. Clubs. Phil Peters is also deputy chairman of Alumni Day, and Windy Johns is on the class reunions committee. Serving as Alumni representatives on Departmental Visiting Committees are Bertrand E. Bennis for the Biology Department and Bill B. Bergen for Sponsored Research. On the Educational Council are Dave McLellan, 1902 East Rancho Drive, Phoenix, Ariz.; Gil C. Mott, 95 Sycamore Lane, Fairfield, Conn.; Walt Wojtczak, 73 Van Buren Avenue, West Hartford, Conn.; Cliff A. Lytle, Scovill Manufacturing Co., 99 Mill Street, Waterbury, Conn.; Bob Jordan, 625 Cornelia Avenue, Chicago, Ill.; Al Woll, Box 2064 Station D, Evansville, Ind.; Phil Peters, 14 Cushing Road, Wellesley Hills, Mass.; Jerv Webb, 8951 Alpine Street, Detroit, Mich.; Fred Sherriff, R.F.D. #1, Box 112, Hickory Corners, Mich.; Bill Bergen, the Glen Martin Co., Baltimore, Md.; John Murphy, 968 West 32d Street, Kansas City, Mo.; Phil Scarito, 2 Birch Avenue, Pennington, N.J.; Charlie Griffiths, 209 Water Street, Binghamton, N.Y.; Walt Sherry, 1160 Main Street, Buffalo, N.Y.; George Wemple, Room 3124, 61 Broadway, New York City, N.Y.; Evan A. Edwards, 378 Beresford Road, Rochester, N.Y.; John Hanlon, 10 McGibbon Avenue, Amsterdam, N.Y.; Dick Young, 2540 North Moreland Boulevard, Cleveland, Ohio; Mrs. L. Polly Thompson, 1060 Southwest King Street, Portland, Ore.; John Gallagher, 443 Lafayette Avenue, Palmerton, Pa.; and Norm Robbins, 3505 White Settlement Road, Fort Worth, Texas.

Just received word that Jonathan B. Cobb, Ed L. Bartholomew, Gil C. Mott, John K. Jacobs, and Art Zimmerman have joined the list of those planning to attend our 25th reunion. Don't forget June, 1962. — ROBERT H. THORSON, *Secretary*, 506 Riverside Avenue, Medford 55, Mass. S. CURTISS POWELL, *Assistant Secretary*, Room 5-323, M.I.T., Cambridge 39, Mass. JEROME E. SALNY, *Assistant Secretary*, Egbert Hill, Morristown, N.J.

1938

Occasionally someone heeds my call for contributions to these notes. Perhaps this time some of the wives who read these columns will follow the example of Natalie DuBois. She writes that Louis is secretary-treasurer of Forshaw, Inc. They have five children including twins born in Chicago when Louis was sales manager of the Dewey and Almy Chemical Company office there. Last summer the DuBois family toured the East and included a visit to the School of Architecture at the Institute for the benefit of one of the twins.

The M.I.T. Club of New York would like you to know that it has permanent quarters at the Hotel Biltmore. Lunch and dinner are served each weekday, with one day a month designated for each class. The Friday following the third Monday has been established for the Class of '38. The sponsor for our Class is Lou Bruneau, and I am sure that he would be happy to hear from any of you.

I have a note stating that George Woo works as a principal engineer at the new plant of Avco Manufacturing Company in Wilmington, Mass. He lives in Newton and has three children from 7 to 15 years of age. A news item reports that Frank Atwater has been made vice-president of manufacturing of the Fafnir Bearing Company. Another item reports that Francis Sargent '39 has resigned as commissioner of natural resources for the Commonwealth of Massachusetts to become executive director of the Outdoor Recreation Resources Review Commission in Washington. The Washington agency is a new commission consisting of members from the legislative branch of the government and of citizens appointed by the President. The chairman is Laurance Rockefeller. Another brief item indicates that last summer Benjamin Siegel presented a paper in Santa Monica before the Electron Microscope Society of America. His subject was "Studies on the Structure of Evaporated Metal Films with the Electron Microscope."

Recently the *Providence (R.I.) Sunday Journal* contained a lengthy article about Joseph Vallone. At the end of the year he retired as director of public works for the state of Rhode Island, after having served in that capacity for the past four and one-half years. While in office, he directed road and bridge projects totaling on the order of \$100,000,000. The Vallones have a son and two daughters. Apparently the family has enjoyed Joseph's period of public life as much as he has. — DAVID E. ACKER, *Secretary*, Arthur D. Little, Inc., 35 Acorn Park, Cambridge 40, Mass.

1939

Sam Sensiper traveled in January to Mexico City, where he was general chairman of a conference attended by some 500 electronics experts from all parts of the world. In seven days Sam left Los Angeles, handled his meeting, did a day's work in New York City, and returned to his new home in Inglewood, Calif., to spend the week end with Elaine and their three youngsters.

Roy Heacock has been assigned new duties at Standard Steel, where his latest hat carries the title of acting chief engineer. One Sunday during January Roy brought his pretty wife and two youngsters over from Whittier, and after a two-mile hike in the sand along the ocean beach we all came back to surround some barbecued chicken. After having digested the chicken and also some newspaper reports about the midwinter eastern floods and blizzards, we came to the conclusion that there is some reason why more than 200,000 people migrated to the Los Angeles area during the last 12 months.

'39 men who are active this year in the annual Alumni Fund drive include Sam Sensiper, Bert Kleinhofer (Whittier, Calif.), Oz Stewart (Darien, Conn.), Don Waterman (Easton, Conn.), Bill Mohlman (northwest Indiana), George Beesley (Lynnfield, Mass.), J. Hunsaker (Milton, Mass.), Aaron White (Waban, Mass.), D. Campbell (Wakefield, Mass.), C. Williams (Cranford, N.J.), Sam Stearns (Short Hills, N.J.), and Barry

Graham (Montreal Canada). While the quantity of the contribution is important, I understand it is of even greater value to the Institute to be able to show a high percentage of Alumni are actively supporting its programs and are demonstrating such support by giving. So, even if the amount is not large, let's each give something and get that percentage figure up.

In the political spotlight this spring is J. Arthur Montgomery, who is a candidate for re-election to the Board of Assessors at Scituate, Mass. Hope you get elected, Art; and if you can swing it, say in your spare time, how about saying a kind word in my behalf to your parallels here in my area who have managed to increase our taxes by more than 30 per cent in two years?

Fred and Eugenia Cooke and the Four Cookies are in orbit these days. On the distaff side Eugenia has a new mink stole. The Four Cookies are busy with new playmates, Girl Scouts, junior rifle club, piano, hula, and so forth. And Fred has moved his family from the Washington, D. C., area to Headquarters, Pacific Missile Center, Point Mugu, Calif. Fred's title is installation development officer and he works on the staff of the Commander, Pacific Missile Range. Eugenia reports that Fred was cramming (about February) for some exams which were required for him to be appointed captain. Well, the exams couldn't be any rougher than 8.01, Fred, so by now your hats and sleeves may have more gold braid. Our best to you in your new assignment and let's get that guitar warmed up for the reunion!

Bob and Sybil Saunders have relocated at 175 Cliff Road, Wellesley Hills, Mass. Bob is vice-president of Ludlow Manufacturing Company and will probably spend much time making money for his stockholders. Sybil will divide her time between renewing old friendships with her classmates at Simmons and handling the affairs of their three daughters, Elizabeth, Maria, and Prudence.

And in the meantime I expect Doc Wingard and his committee will be getting out the word about our 20th reunion. Classmates I have seen all seem to be working up lots of enthusiasm for this shindig, and I expect that all those who are able to make it will have a really top-notch time. — HAL SEYKOTA, *Assistant Secretary*, 416 Calle Mayor, Redondo Beach, Calif.

1940

When your Secretary was in Cambridge recently, he had the opportunity to speak very briefly with Russ Haden. Apparently, there have been no increases in the family (six children) or animals, of which he had collected quite a few at the time of the reunion. I spoke with Milt Green, who advised me that he and Gitty had just come back from a delightful trip to Nassau and were again exposed to the rigors of Boston winter (1 degree above the day I spoke to Milt).

Bob Harper has been elected to the board of directors of the Associated Industries of Massachusetts. He is, at present, vice-president of the United Greenfield

Corporation and general manager of Greenfield Tap and Die Division.

James Rea has been appointed special assistant to the president of Aeronutronic Systems, Inc., in Glendale, Calif. Jim is one of the leading authorities in this country on the analysis of automatic control systems for aircraft and guided missiles.

Jerry McAfee has been elected vice-president of the American Institute of Chemical Engineers for 1959. Jerry is vice-president of the Gulf Oil Company and has approximately 10 patents in the chemical engineering field; he is also the author of *Cracking with Catalysts*. Claude Shannon delivered a paper on "Channels with Side Information at the Transmitter" at the conference on Communication of Scientific Information held on the occasion of the dedication of the International Business Machines Research Laboratory in San Jose, Calif. His article appeared in the I.B.M. *Journal of Research and Development* last October.

For those members of the Class who have not received a Directory for 1958-59, the following members of our Class will be found therein: Class representative on the Alumni Council, Jack Danforth; Council Representative from the Cincinnati Club, James Baird. Alumni Representatives on Departmental Visiting Committees are: for Course III, John Holomon; Course IV-A, Ieoh Ming Pei; Course VIII, Julius Molnar; Course X, Jerry McAfee.

Then, of course, there are the Class Officers: Russ Haden, Jr., President; Frank Penn and Bill Kather, Vice-presidents; Al Gutttag, Secretary-Treasurer; Marshall McCuen and Sam Goldblith, Assistant Secretary-Treasurers; Larry Bernbaum, Class Agent; Jack Danforth, Special Gifts Chairman.

In addition, of course, numerous members of our Class are officers of M.I.T. groups throughout the country and are in the Institute's Educational Council.

If you would like to see this column expand, write to Al! — ALVIN GUTTAG, Secretary, Cushman, Darby, and Cushman, American Security Building, Washington, 5, D. C. SAMUEL A. GOLDBLITH, Assistant Secretary, Department of Food Technology, M.I.T., Cambridge 39, Mass. MARSHALL D. MCCUEN, Assistant Secretary, 4414 Broadway, Indianapolis 5, Ind.

1941

Ted Sherburne writes: "Greetings from the Far West. I am now working for the University of California, as head of the Department of Visual Communications, University Extension, and statewide co-ordinator of educational television. I am principally involved with the development of educational television for the University, although I have additional responsibilities involving film production, film library services, and so forth. You might be interested in the enclosed brochure, which describes the correspondence course in atomic and nuclear physics which we are conducting in co-operation with the National Broadcasting Company 'Continental Classroom' series." The program is carried on WGBH-TV in Boston, as well as other

stations on a nationwide hookup. Consult your local newspaper for dates and times, and be prepared to rise early to watch it; it's on around 6:30 A.M.

A warm welcome from the chilly Berkshires to Luke Hayden, who comes here to take the post of president of the City Savings Bank of Pittsfield. At this writing we haven't been able to get together for a talk, but a complete account of Luke's background appeared in the *Berkshire Eagle*, and went as follows: "After graduation from M.I.T., he joined Westinghouse Electric; and in September, 1943, he joined the Navy and was assigned to the Boston Naval Shipyard as a construction officer. Released from active duty in April, 1946, he became the assistant to the secretary of the Syracuse (N.Y.) Savings Bank. He was successively promoted to the positions of assistant vice-president, vice-president, and finally, vice-president and secretary in February, 1957. During Mr. Hayden's stay in Syracuse, he obtained a master of business administration degree from Syracuse University in 1950, and in 1954 completed the investments course at the Graduate School of Banking at Rutgers University. In addition to his regular work, he has taught classes in economics and investments at Le Moyne College, Syracuse University, and the American Institute of Banking.

"Mr. Hayden is a former president of the M.I.T. Club of Central New York, was recently elected president of the Bond Club of Syracuse, and is secretary of the Optimist Club. He has been active in Community Chest work. In 1943, he married Dorothy Karb of Great Neck, Long Island, N.Y. They have three daughters and a son."

Al Bowker has been appointed dean of the Graduate Division of Stanford University, responsible to the provost, the University's principal academic officer, for co-ordination of graduate instruction and faculty research activities in all fields. He is also executive head of the Department of Statistics, and has been serving as assistant to the provost since 1956. Charles Hunter, control manager of Du Pont's Photo Products Department, has been appointed special assistant to the department management to co-ordinate the photopolymer printing plate development program. He joined the company in 1941 as an engineer in the Buffalo rayon plant, and went to the Niagara Falls plant of the Electrochemicals Department in 1942. Five years later, he was transferred to Wilmington, Del., as a design engineer. He was appointed a research supervisor at the Parlin, N.J., plant of the Photo Products Department in 1951, process superintendent in 1953, and assistant production superintendent in 1956. Later that year, he was promoted to control manager of the department.

Our best wishes to Beverly Dudley, retiring editor of *The Review*, on his new assignment as assistant to the director of the M.I.T. Lincoln Laboratory; and a hearty "welcome aboard" to his successor, Volta Torrey.

Keep in mind Alumni Day, June 15, the inauguration date of President Stratton; plan to be on hand for all the

events. — IVOR W. COLLINS, Secretary, 9 Sunnyside Drive, Dalton, Mass. HENRY AVERY, Assistant Secretary, Pittsburgh Coke and Chemical Company, Grant Building, Pittsburgh 19, Pa.

1942

Power Sources, Inc., of Burlington, Mass., has announced the election of Stanley N. Golembe as president. Stan was formerly executive vice-president of this new research-based enterprise, which is devoted to the design, development, and manufacture of devices for semiconductor and magnetic solid-state power conversion. Their units have been used for missile telemetering, computers, television broadcasting, radar, mobile communications, and aircraft electronics.

An adventurous life is not only the lot of Ron Shainin in Africa, but also Jack Williams in Cuba. Jack is employed by the General Electric Co. out of Schenectady on assignment to Havana. He returned to Cuba from a Christmas vacation with his wife and children in Summit, N.J., just in time to witness Castro's victory from the hot vantage point of the Havana Hilton Hotel. In an exclusive telephone interview with a reporter from the *Boston Herald*, Jack reported on the fighting in the plaza in front of the hotel and an abortive attempt by a mob to seize the radio-television station next door. The Americans were quite naturally advised by our embassy to stay indoors, and so they spent the first few days of January unsuccessfully trying to place long-distance telephone calls and keeping the gambling casino's croupiers busy. Jack told how employees of the hotel, which is owned by the Cuban restaurant and hotel workers' union, halted looters on New Year's Day: "The Hilton was a target because it is a luxury hotel and because Castro has come out against the casinos (the union-owned hotel is under Hilton management). On New Year's day in mid-morning, a mob—possibly rebels, possibly hoodlums—gathered in the plaza outside the hotel's main entrance. The waiters, bus boys, porters, even some of the maids went out in front and formed in ranks to protect the hotel. The mob made no attempt to pass them, and finally broke up and went away." Jack has spent many years with G. E.'s overseas operations and for some years was based in Paris. He is fluent in French, Spanish, German, and Italian.

Elliott Friedman sent along an extra set of Ron Shainin's beautiful color pictures that appeared in *Life* magazine and the following interesting notes which are best quoted in full: "As for myself and family, everything is coming along fine. I made a change from Hazelton last June to Taller and Cooper, Inc., a division of American Electronics, Inc. My position is that of chief electronics engineer. Most of Taller and Cooper's projects involve nonmilitary work, electronic and electromechanical equipments and systems in the field of data processing, special instrumentation systems for toll and traffic control areas. Military projects, if any, involve our printers, which are usually modifications of our standard

equipments. Parts of these equipments utilize analogue-to-digital conversion units of our own design, tape readers, tape punchers, and other equipment associated with tape and card controlled business and data processing (and machine shop) equipment. We have also designed a digital-to-analogue unit for Naval Ordnance for the conversion of coded tape to analogue output for gun fire control systems testing. In the special instrumentation systems are such projects as electronic weighing for trucks (with printed readout); steel mill pipe weighing; length and diameter measuring and stenciling (all electronic and electromechanical); the 'Arbitron,' a television rating system currently installed at American Research Bureau; and other complicated systems. At the moment I am having a good time figuring out a proposal for an automatic traffic density lane changing control system for the Neponset River Bridge in Boston and for other roads in Massachusetts. Warren B. DeLano'44 is the engineer at Bruce and Campbell in Boston who prepared the specifications."

A letter from Norman Pinto tells us that the Lummus Corp. has built a beautiful new plant for the Beryllium Corp. Pictures of the new facilities are shown at the top of page 125 of the January '59 Technology Review. From the stationery we noted that Norm is plant manager of the new nuclear division facilities in Hazleton, Pa.

We announce with sorrow the death of Dr. G. Lynde Gately of Revere, Mass. Dr. Gately was quite a bit older than the rest of us, for he already had a successful career as a physician (graduate of Tufts Medical School) and three years' service as health commissioner of Boston before coming to Tech for a master's degree in public health at the time we were there. His wife, the former Marie Fortunati, also has a degree in public health from the Institute. After receiving this additional degree, he joined the Navy and served as a lieutenant commander in its medical corps. At the end of World War II he returned to private practice in East Boston. Dr. Gately was 61 at the time of his passing.

The Rockbestos Products Corp. of New Haven, Conn., has announced the appointment of James F. McClelland, Jr., as manager of its Production Engineering Dept. The feature speaker at the fifth annual Career Week End at Williams College was Professor William van Alan Clark. Bill was a 1941 alumnus of Williams before coming to take his master's degree with us. He discussed the practical applications of one's preparation for a career.

A report from our class agent, Charlie Speas, and our class special gifts chairman, Carl McGinnis, shows the pleasing results of this year's campaign. As of the middle of January there were already more special gifts (\$50 or more) than in all of last year. The January total of 26 should be greatly exceeded by the time you read these notes.

By now spring has arrived in all parts of the country, and with it the good wishes of your *Secretaries*: ED EDMUNDS, J. J. QUINN, BOB KEATING, and LOU RO-

SENBLUM (49 Farnham Street, Belmont 78, Mass.).

1943

Frantz Kreider and Marilyn Reed became engaged in January; Marilyn, a teacher in East Orange, N.J., is a graduate of New Haven, Conn., Teachers College. Frantz is a staff supervisor with the meter division of Westinghouse in Newark. He received his master's degree in business administration from New York University after graduating in electrical engineering with our Class. Charlie Lawson, who has been general manager of the I.B.M. plant in Rochester, has been promoted to assistant director of manufacturing services on the corporate staff of International Business Machines Corp. in New York City. In his new post Charlie will assist J. W. Schnackel, Vice-president, in recommending corporate manufacturing policy and providing technical counsel to the operating division managers.

Dick Adler's paper on the "Limitations des performances de bruit des amplificateurs lineaires," which he presented at the Congres tubes hyperfrequences in Paris in 1956, has recently been published. His coauthor was Professor Hermann Haus'54. Thomas Peacock, Jr., former manager of market research, has been appointed to the newly created position of marketing manager at Exide Industrial Division of the Electric Storage Battery Company, Philadelphia. Tom had a great deal of experience in advertising and market and opinion research prior to joining Exide in 1955. The Peacocks live with their son and two daughters at 1876 Edmund Road, Abington, Pa., a suburb of Philadelphia.

Stan Roboff and Bill Kates, both with Sylvania-Corning Nuclear Corporation, presented papers at the first International Symposium on Nuclear Fuel Elements held in New York City the last week in January. As class treasurer, Dick Feingold reports that as of February 15, 1959, a total of \$500 was received in class dues, and an additional \$10.00 as gifts to the Class, prior to the dues letter. The treasury is earning interest in a savings bank, and is used, as some of you know, to meet expenses such as interim mailings and flowers. It also can be applied, when the Class so votes, as part of our 25th reunion gift to Tech. Nine more years, fellows, that's all.—RICHARD M. FEINGOLD, *Secretary*, 49 Pearl Street, Hartford 3, Conn. *Assistant Secretaries*: CHRISTIAN J. MATTHEW, A. D. Little, Inc., 314 Battery Street, San Francisco, Calif.; JOHN W. McDONOUGH, JR., R.R. #1, Donwood Drive, Naperville, Ill.

1944

By the time that you read these notes, the class reunion will be only two months away. At this moment, I know that the committee is working hard on making it a memorable one in many respects. Several of the men have asked about bringing their wives, and the committee feels it was a grave error that they were not included in the early pub-

licity releases; they are definitely invited! Also, some of the men have asked about baby sitter arrangements, and these can be provided if you will make a note of your requirements at the time that you send in your firm reservation. I was talking to Bob Breck a couple of weeks ago, and he just sent me the latest rundown on attendance. We definitely have 61 coming, and there are 105 men who are undecided.

On the cards, a number of you added little notes, which is what the space was for. Of those who will not be able to attend, Warren Southworth writes from Madison, Wis.: "Can't be there as I'll still be grading examinations at the University of Wisconsin. Greetings to all of you." Norman Roberts from Seattle, Wash.: "Am now associated with Applied Physics Laboratory, University of Washington." I notice that Norm has now earned the title of Dr. Norman, which I presume is in physics. Peter Hopkins writes: "Sorry, but work on the new Time and Life Building, on which I'm engaged, will be nearing completion at that time, and I'm afraid I can't break away." Nicholas J. Grant writes from Cambridge: "Will probably be in U.S.S.R.?" Ought to make an interesting feature article for The Review. Al Corona advises from New York City that he is leaving the country and doesn't expect to be around at reunion time. Bill Collier's wife noted on the post card: "Now stationed in Korea." 'Nuff said. Two of the undecided men made notes as follows: A. P. Hildebrandt writes from Fort Payne, Ala.: "I'm a long way away—prefabricating houses." Peter Matthews, who lives in Needham, advises: "Now the proud father of three kids, Peter 10; David, 8; Andrea, 2. Am business manager at M.I.T. Instrumentation Laboratory." Those who are coming to the reunion had these things to say: Thomas F. Dolan, living in Boston, advises: "Married Judith Weeks of Westwood, Mass., March 2, 1957." John W. Hoopes, Jr., says: "I sure hope that I'll see Pete Rinaldo there." J. S. Koiner, Jr., located in Norfolk, Va., says: "Presently with General Electric Co., looking forward to a good time." Pete Quattrochi says: "We'll be there, barring a major catastrophe. Am now working in Providence and living in West Hartford." A. B. Van Rennes, supervisor of Bendix Research's Nuclear Technology Group, writes: "Spent four weeks in Europe: two at International Atoms for Peace Conference in Geneva; then one week in Paris delivering four Bendix papers at International Colloquium on Nuclear Electronics. Oldest daughter Dawne accompanied me; lived three weeks with my Dutch cousin's family in The Netherlands."

In line with getting area chairmen to help on local promotions of the reunion, Bill Ritterhoff in Towson, Md., will be contacting you fellows who live around Baltimore. He has the list of men in our Class who live in the vicinity; so if you fellows would like, you can contact him to find out who else is around. Also, if any of you in other areas are interested in getting a list of

'44 men, either 2-'44 or 10-'44, who live in your area, drop me a note, and I'll gladly send it to you. — PAUL M. HEILMAN, Assistant Secretary, 616 Forest Avenue, Westfield, N.J.

1946

Roger Sonnabend's name is appearing in the news more and more of late. The latest clipping informs us that he has been elected to the board of governors of the Boston University Human Relations Center. Roger is married, has four children, and lives at 46 Malia Terrace, Chestnut Hill, Mass. His principal occupation is as executive vice-president of Hotel Corporation of America, but his extracurricular activities list is as long as your arm. In addition to the new B.U. appointment, he is a director of the Newton (Mass.) Taxpayers Association, a member of the board for the New England area of the National Conference of Christians and Jews, and finance chairman for the hotel section of the U.S. Committee for the United Nations. He has been active in the Boston Red Feather campaigns, the American Legion, the American Hotel Association, the Massachusetts and city of Boston Hotel Associations, the American Society of Travel Agents, the U.S. Chamber of Commerce, and the Greater Boston Chamber of Commerce. As a result of these and many other activities, he was recently selected by *Esquire* Magazine as one of "Sixteen Bright Young Men in Business Under 36." (They should have made it eighteen: and then both you and I would have made the list.)

John F. Marr is a mathematics instructor at the Cheshire Academy in Cheshire, Conn. John lives at 634 Cornwall Avenue, Cheshire, Conn., and is active in town affairs, having been recently elected to the town planning commission. Wagner Thielens, Jr., is coauthor of a book, *The Academic Mind*, published by the Free Press, Glencoe, Ill. It is a book which reports the results of more than 2,400 interviews conducted on 165 campuses throughout the country and undertakes to portray the character of the American college professor and the institution in which he teaches. Wagner is a lecturer in sociology at Columbia University, New York, and research associate at Columbia's Bureau of Applied Social Research. Robert W. Boesel received his master's degree in business administration from the University of Buffalo in 1955, was project manager at Bell Aircraft Corporation in Buffalo until 1956, was chief project engineer in the Guided Missile Division of Republic Aviation Corp. until 1958, and is now assistant division manager on the Polaris program at the Missile Systems Division of Lockheed Aircraft Corp. in Sunnyvale, Calif. Bob is married and has four children.

John A. Ritchey received his Ph.D. from the University of Chicago and is an associate professor of industrial engineering at Purdue University. He is a coauthor of the Prentice Hall textbook *Manufacturing Organization and Management*. John makes his home at 348

West Oak Street, West Lafayette, Ind. Robert E. Latimer has recently joined Air Products, Inc., of Allentown, Pa., as assistant to the vice-president of engineering. He had a paper published in the March, 1957, *American Institute of Chemical Engineering Journal*, was listed in *Who's Who in Engineering* for 1954 and 1958 as well as in *American Men of Science* in 1955 and *Chemical Who's Who* in 1956. Bob is a lieutenant colonel, Corps of Engineers, U.S. Army Reserve; is married; has three children; and lives at 833 Lawrence Drive, Emmaus, Pa. Captain Walter R. Milliken, U.S. Air Force, holds a degree of M.S. in Applied Mathematics and is assistant professor of mathematics at the U.S. Air Force Academy. His home address is 1067 Tucson Street, Aurora, Colo. Rouholah Zargarpur earned his master's in business administration from the University of Chicago and is project engineer, Automotive Instruments Engineering, for Stewart-Warner Corp., Chicago, Ill. He is single, lives at 420 Thatcher Street, River Forest, Ill. He is chairman of two committees in his church, chairman of the education committee for Stewart-Warner, and regional chairman of the fund raising campaign for Alumni of the Chicago area.

Theodore S. Church is manager of the Electronic Research Department of Sandia Corporation, Albuquerque, N.M. According to Ted, Sandia is a prime contractor to the Atomic Energy Commission and operates the Sandia Laboratory in areas of atomic ordinance. He says the title of his department is a bit of a misnomer. His work is in various fields of high voltage electronics plus a smattering of computers and physical electronics. His job takes him, about once a month, to Florida, the University of California in Berkeley, Schenectady, and Milwaukee in administration of his various research and development contracts. Ted is married, has two children, and lives at 1713 Inez Drive, Northeast, Albuquerque, N.M. On his questionnaire he asked for the address of Alexander W. McEwan. I think I sent him a card with that info; but in case I didn't, or if others would be interested, Bill lives at 117 Riverview Road, Pompton Lakes, N.J. William Henry Tucker's latest address is Army Section, Artillery School, A.P.O. 140, San Francisco. As associate professor of chemical engineering at Purdue University, Bill is serving his 18 months in Taiwan, Formosa, sponsored by International Co-operation Administration on a contract between Purdue and Cheng Kung University, Tainan, Taiwan. His wife and two children are with him. Denis U. Noiseux, in co-operation with two others, presented a paper at last year's meeting of the Acoustical Society of America held in Washington, entitled "Telemetry System for the Measurement of Boundary Layer Noise." The paper described a telemetry system for measuring boundary layer noise on a supersonic rocket sled. Dr. Noiseux lives at 108 Wendell Street, Winchester, Mass. Thomas F. Malone was chairman of the session on Statistical Meteorology and Forecasting at the 1958 meeting of the

American Meteorological Society. Dr. Malone is national secretary of that society and director of research for the Travelers Insurance Companies, Hartford, Conn.

Captain Kenneth J. Hauser, U.S. Air Force, is weather officer, U.S.A.F., stationed near Fairbanks, Alaska. Ken did graduate work in meteorology at New York University in preparation for this assignment. He expects to return to the States after his three-year tour is up in November, 1959, and to retire from the Air Force with 20 years' service in 1960. Ken is married, has three children, and their present address is Detachment 5, 11th WEARON, A.P.O., 937, Seattle, Wash. Edward J. Fradkin is a project manager for the Scientific Design Company, Inc., of 2 Park Avenue, New York. He has recently returned from a five-month assignment in Japan during which he supervised the design of a terephthalic acid plant being constructed by Mitsui Petrochemical Industries, utilizing a process developed by Scientific Design.

Alexander Kananovich is chief plant engineer for the General American Tank Storage Terminals, Carteret, N.J. As such he is in charge of design, contract, and construction supervision of storage tanks, pipe lines, and so forth. The company has five plants and so Alex is kept very busy. He recently bought a house, and now he and Evelyn and their two daughters live at 142 Mali Drive, North Plainfield, N.J. Alex reports that he attended the Class of 1947's 10th reunion and was disappointed in the poor showup of our class members. The reason for that, Alex, is that you were a year late. You were in the class of 6-'46. By vote of the two classes, 2-'46 and 6-'46, the two classes were combined and are now known as the class of 1946. This may not have been too well announced, although we did mention it in these notes; so the confusion is understandable. But now that you know I hope you will plan to attend our 15th in 1961. From 1947 until 1954 William R. Lindsay was assistant and then superintendent of the Blackintow Mills, Inc., of South Carolina, producing women's wear woolsens. From 1954 until 1955 he was resident manager of Wyandotte Worsted Co. From 1955 until 1957 he was production manager of Excelsior Printing Co., North Adams, Mass. He is now production manager of the *Louisville Courier-Journal and Times*. He is married, has five children, and lives at 3012 Tremont Drive, Louisville, Ky.

That should do it for this month. I leave home next week for two weeks' Navy Reserve duty in Washington, D.C., attending a course in guided missiles, and have plans to mooch a Sunday dinner with John and Nancy Taylor in Baltimore. Will report on his doings next month. — JOHN A. MAYNARD, Secretary, 15 Cabot Street, Winchester, Mass.

1948

This must have been a long cold winter with most men of '48 sticking close to their firesides. At least our news sources were, for we haven't come upon many items to pass along.

Gordon Taylor, though, strayed from the fireside out in Littleton, Colo., and found himself stranded in Cuba during the recent overthrow of Fulgencio Batista. Seems Gordon and his wife, Marguerite, were Christmas vacationing in Florida and added a side trip to Cuba. As the government there collapsed, they sat out New Year's Eve and New Year's Day in their hotel waiting for conditions to become more stabilized before being evacuated. Apparently their taste of the revolution was somewhat turbulent before they obtained passage back to the mainland and home to Colorado. Gordon is circulation director of the Rogers Publishing Company in Denver and part-time lawmaker as a Littleton city councilman.

Late in December, Miss Carole Giacomoni of Huntington, Long Island, N.Y., became the bride of James F. Sheehan, Jr., of Holyoke, Mass., and New York. Carole and Jim will live in Centerport, Long Island, where he is an associate in the firm of Gas Dynamics, Inc. We welcome Carole to the Class of '48, and our very best wishes to you both.

We belatedly note that last fall Merle Andrew was named an Alumni member of the M.I.T. Corporation Visiting Committee for the Department of Mathematics. These Visiting Committees usually consist of three members of the M.I.T. Corporation, three non-M.I.T. members chosen by the president, and three Alumni members recommended by the Alumni Association. Their purpose is to give a particular department the benefit of advice and opinions of an interested outside group not connected with the M.I.T. Faculty or Administration.

Also, Sam Levin joins Professor Manson Benedict '32 of the Nuclear Engineering Department on the Massachusetts Commission on Atomic Energy. This board was established to co-ordinate the activities of state agencies dealing with various legal and technical aspects of the peaceful uses of atomic energy.

Out in Los Angeles, William Aiken has been named manager of the Project Engineering Department in the Engineering Division of Thompson-Ramo-Wooldridge Products Company and is responsible for installation and check-out of their computer control and data logging systems.

Among the technical journals, we have been represented by J. S. Archer with an article "Digital Computation for Stiffness Matrix Analysis" in the October American Society of Chemical Engineers *Proceedures Journal* of the Structural Division, and by A. R. T. Denues with a paper "Functional Electron Microscopy Pertinent to Cancer Research" given before the Electron Microscope Society of America.

Now that spring is here, lets defrost those fingers and take pen in hand—we'd like to hear from all of you soon.—HARRY G. JONES, RICHARD H. HARRIS, *Secretary*, 26 South Street, Grafton, Mass. HARRY G. JONES, *Assistant Secretary*, 94 Oregon Avenue, Bronxville, N.Y. HERBERT S. KINDLER, *Assistant Secretary*, 128 Elatan Drive, Pittsburgh

16, Pa. ROBERT R. MOTT, *Assistant Secretary*, Box 113, Hebron, Maine.

1949

Reunion bulletin! Cochairmen Cox and Taschioglou report well over 150 reservations already for our June 12 to 14 "do" at The Curtis Hotel, Lenox, Mass. Send your \$3.00 class dues and reservation information to M.I.T. 10th Reunion Committee, Polaroid Corporation, Cambridge, Mass. You can look forward to excellent facilities, beautiful surroundings, and plenty of sociability. Bring the wife and leave the kids at home. More news next issue.—O. SUMMERS HAGERMAN, JR., *Secretary*, 8519 Pringle Drive, Cincinnati 31, Ohio.

1951

That certain magnetic attraction the Institute had for us some years ago is still working. Fred Lehmann felt the force all the way from St. Louis, answered the call, and is now back at Tech as assistant alumni secretary. It's too early to know what he'll be doing, but we can be sure his activities will help to maintain the reputation M.I.T. has for one of the best alumni organizations in the country. Dick Towill, who is way out in Hawaii as a civil engineer with R. M. Towill Corporation, answered the transoceanic call to become a member of the M.I.T. Educational Council. The Council, for those who may not know, was organized after we graduated to aid young men and women considering an education like that of M.I.T. in making their plans. Dick will be one of three Council members in Hawaii.

We don't know exactly how many in our Class have been attracted to the M.I.T. staff, but a recently released report noted two in one shot. The Plastics Division of Monsanto sponsored a three-year project at Tech to study plastic structural sandwich panels for their architectural potentialities. Marvin Goody directed the study, and Bernard Spring edited the final report; both are assistant professors of architecture. The report lists the following characteristics of plastic sandwich panels: 1) plastics can be formed into complex surfaces of double curvature; 2) plastics have the ability to perform major structural jobs and yet remain transparent or translucent; 3) a durable wearing surface and integral color can be built right into the plastic component; 4) several methods of texturing plastic sandwich panels are available; 5) plastic structural panels have high strength-to-weight ratios, as compared with those of conventional structural materials. Being at once structure, wearing surfaces, and insulation, they eliminate the need for piling up several separate layers of material to do these three jobs.

Short news notes include the marriage of Adolph Hendrickson and Constance Holt last October in Bethesda, Md. John Aycrigg is taking specialty training in psychiatry, having received his M.D. from Chicago in 1957. He has a daughter born May 13, 1958. Lee Rohde took a position last June in the Flight Propulsion Laboratory Department of General Electric in

Evendale as an Operations Research Specialist. Earlier he was in the Air Conditioning Department of General Electric for four years. He is still single. Dan Esakov was made manager of Computer Engineering by Underwood's research and engineering laboratory and will head the development and design of Underwood's electronic computers. Dan went to Underwood from the U.S. Air Force Cambridge Research Center, where he was chief of the circuitry and devices unit, Data Processing Techniques Section.

Harry Lowell has joined the Organic Chemicals Sales Department of Dewey and Almy. Previously he had been a member of Dewey and Almy's marketing research department. Way back he was with Bethlehem Steel in the Commercial Research Department. He and his wife, Joan, have two children: Jonathan, 5, and Thompson, 3. Max Ulrich has been appointed general manager of advertising and industrial research for Consolidated Edison of New York. Since 1954 Max had been with the Edison Electric Institute, and while there he served as secretary to the atomic power committee and to the technical appraisal task force on nuclear power. Robert Ryland received a Superior Accomplishment Award from the Pottomac River Naval Command for his work as an electronic scientist in the Computer Operation and Maintenance Branch, Computation and Exterior Ballistics Laboratory at the Proving Ground. Hal Cleary is the new plant metallurgist at Massachusetts Steel Treating Corporation after serving for several years as a research metallurgist for Nuclear Metals of Cambridge. Art Compton is back at Exeter Academy as science instructor after finishing his year with the Academic Year Institute at Harvard. He is now introducing a new course, history of science. Art also has had a paper published in the *Journal of Chemical Education*, and another paper entitled "School Science and Mathematics" is due soon.

Ken Weber is hard at work as safety engineer for Du Pont in Ireland, and apparently is having a very enjoyable time. He reports that there are usually very few safety precautions taken on construction work in Ireland, but they have insisted on such common stateside items as goggles, hard hats, safety meetings, gloves, and safety shoes. At first the local workmen thought he was kidding when he mentioned these; now that they realize Ken was serious, they believe he is crazy. But they have not had an accident since 1957. Ken also reports that Northern Ireland has no supermarkets, very few refrigerators, very little central heating, and plenty of rain. The Webers have managed to find a house with what they call central heat—a small stove in a corner of the kitchen with a small radiator in each room. Ken expects his job there will last until the summer of 1960, after which he will return to the States. Arthur Metzner, now an associate professor of chemical engineering at the University of Delaware, chaired the program committee for the 24th annual Chemical Engineering Symposium of the American Chemical Engineering Symposium of the American Chemical Society held in Pittsburgh last December.

Among the academicians in our Class, Moise Goldstein was honored with a Science Faculty Fellowship from the National Science Foundation. Moise was one of 302 selected from 1,069 applicants. The fellowship can be applied toward study or research in an institution of higher learning in the U.S. or abroad, and its stipend approximates the regular salary of the recipient. Louis Weinberg has been re-appointed visiting professor of electrical engineering by California Institute of Technology for the second consecutive year. Louis joined Hughes Aircraft in 1951 and has been a visiting lecturer at the University of California in Los Angeles (1952-54) and a visiting associate professor at the University of Southern California (1955-56). He also gave a series of lectures on lineal network synthesis at England's University of Manchester in 1955 and on network theory and its unsolved problems at the University of Wisconsin in 1956. In addition to these ventures, Louis has been head of the communications and networks research section of electronics laboratories at Hughes. A busy man, to say the least.

Charles Whiting spoke on orbits and trajectories at Northeastern at a meeting of the student chapter of the American Institute of Physicists. Charles has been with the Smithsonian Astrophysical Observatory as a physicist and with Harvard as a research associate. He could speak authoritatively, then, when he said that, although the U.S. moon rocket never reached the moon, enough important data was obtained on changes in air densities at high altitudes to label the attempt successful in other respects. Somewhat comforting! — RICHARD W. WILLARD, *Secretary*, Box 105, Littleton, Mass. ROBERT S. GOOCH, *Assistant Secretary*, 407 Danciger Building, Fort Worth, Texas.

1952

Well, two months have passed since we had enough material for a column; and so we'll get to work with what we have. Most spectacular new items coming in were copies of *Amazing* science fiction stories — October, 1958, and January 1959 — each containing a short story by Al Sevcik. Al writes that four stories appeared in 1958 and there should be a few more in 1959, so watch for them. Al is working for Benton and Bowles ad agency. Letter from Frank Carta announces that Christopher Pace Carta was born a year ago March, their second child. He is still with the Research Department of United Aircraft Corporation in East Hartford Conn., and reported traveling out to an Institute of Aeronautical Sciences meeting and having the chance to drop in on Tim and Bunny Brown. Tim is working for Bell Aircraft, Fort Worth, in the helicopter operation. Also in the birth announcement section comes the word of John Gregory Copenhefer from Ginny and Jack Copenhefer; and Clyde Eisenberg, second son of Herb and Melissa Eisenberg.

Wedding announcements came in from Arnold Kramer and Ann Cohn in New York City; Ellen Seagle and Leonard Polaner in Worcester, Mass.; Judith Stanton and Holmes Bailey in Easton, Pa.; and

Valerie J. Davies and Ernest Capstack, Jr., in Randolph, Mass.

A very nice letter arrived from Harold and Lorraine Roth in San Diego, Calif. Hal is working at General Atomic (division of General Dynamics) and finishing up his thesis for a doctorate in physics from the University of Pennsylvania. New daughter, Leslie Erica, was born in San Diego.

I'm going to quote a bit of the rest of the letter: "We were invited to Phil Giber's wedding in May in New York but couldn't make it. . . . Phil's wife's name is Erma. Mark and Barbie Beran are still around Boston (Waban) and have a little daughter, Sarah. Art and Rhea Freeman are living in Brookline and have a son, Jonathan Eric. Art is with the Watertown Arsenal. Vic and Phyllis Mizel are now in Tennessee, where Vic is teaching mathematics at the University of Tennessee." Many thanks for the news; such letters are always welcome and especially so when they bring us up to date on several classmates.

Two '52 members have been appointed to the Educational Council: William (Phil) Schirm, Jr., of Savannah, Ga., who is an industrial engineer with the Union Bag-Camp Paper Corporation; and William T. Whittington of Rochester, N.Y., who is an assistant foundry superintendent at the Gleason Works.

Interesting occupations department: "Boston's Tuna Products Corporation is the only corporation to produce and cure fresh frozen tuna commercially," so says an article from the *Boston Herald* quoting Dr. Yaichi Aikawa, Treasurer. "We take the fish out of tin and put it into packages (Cryovac) for the table in varieties like cuts of beef." Yaichi holds his S.B., S.M., and doctorate in biophysics from the Institute.

To end this column, plans are getting underway in the Boston area for another Class of 1952 cocktail party to be held around Alumni Day week end. We had such a good time last year, we thought we'd do it again. So watch this space next month for exact details. And please, if you have any information of interest concerning classmates, drop a line to Jim Margolis, Assistant Secretary, or myself. — DANA M. FERGUSON, *Secretary*, 252 Great Road, Acton, Mass. JAMES MARGOLIS, *Assistant Secretary*, 218 Richbell Road, Mamaroneck, N.Y.

1953

Very little to report. Please write whenever you get a chance. Phil Bianchi was seen wandering around one of the Snitz-enjibber's dances (an active social group here in ole Bean Town); also seen returning from a week end of skiing. Mandy and Ann Manderson bought a Volkswagen truck, grabbed their three kids and tromped down into the deep South and Southwest on a three-week business and pleasure trip. Saw Paul and Ginny Shepherd; they are expecting a third child sometime this summer.

Bill Gilbert presented a paper entitled, "Device for Measuring Tensions in Water" at the annual meeting of the Highway Research Board in Washington, D.C., this January. Received a newspaper an-

nouncement of the appointment of Arye Grozbord as vice-president, assistant general manager, and director of Universal Cooler Company, which is located in Brantford, Ontario, Canada. As the name implies, the company manufactures refrigeration equipment, both the commercial and home type. The M.I.T. Club in Mexico City is holding the 11th annual Fiesta; among those on the 1959 Fiesta committee is Max Michel.

Jeff Davis dropped by the office while he was serving as an interviewer for his company, Dewey and Almy, Cambridge Mass. He has just changed jobs with them, from sales engineer to assistant to the research director; his company is principally engaged in the chemical specialty business. He, his wife, and their one-year-old son are living in Westwood (just south of Boston), in a new home that he designed and for which he served as general contractor. Immediately following graduation, Jeff took his commission in the Corps of Engineers and spent his two-year tour of duty in Fort Reilly, Colo. and Guam. He mentioned that he had seen Jeff West (don't let the two "Jeff's" confuse you), who is now at the Harvard Business School; he also is married and has a year-old son. Frank Turcotte finished the formal part of his master's degree requirements and is now in the process of writing his thesis. Hopefully, this will be finished in a couple of weeks and he can return to the \$\$\$\$\$\$ trade. — MARTIN WOHL, *Secretary*, Apartment 8-18,C, 100 Memorial Drive, Cambridge 42, Mass.

1954G

Since the January column I received some information about our classmates; however, I sincerely wish that more of you would just write a post card to me telling me of your experiences, and so forth, in the last few years.

Recently I received a letter from Beverly and Nolan Jones, who are deep in the "Heart of Dixie." Nolan has a Lincoln Laboratory "field assignment" working with SAGE at Gunter Air Force Base in Montgomery, Ala. For six and one-half years in Cambridge, Mass., Nolan was explorer advisor for Post 48 of the Boy Scouts; and now in Montgomery he is assistant scoutmaster for Troop 107. The family now consists of Susie (four), Tommy (two) and Cindy (nine months). A recent post card from Arnie Berger informed me that he is a part-time instructor at Case Institute while performing postgraduate work. He also is resident counselor to the Indian Steel Trainees (INSTEP). On December 25, 1958, he married Ruth Strauss, a graduate of Smith College, and they are now living in Cleveland.

The board of directors of the Institute of Radio Engineers has announced that the 1959 W. R. G. Baker Award, annually awarded to the author of the best paper published in the *Transactions* of the I.R.E. professional groups, was given to Richard D. Thornton, Assistant Professor of Electrical Engineering, M.I.T. The award was presented on March 25, 1959, at the I.R.E. national convention. Congratulations to Professor Thornton!

Continuing along professional lines, I learned that Dr. S. Blum is a research staff member for Raytheon Manufacturing Co., Waltham, Mass. His recent paper for the American Ceramic Society was entitled "Microstructure and Properties of Ferrites." In the September, 1958, I.R.E. *Transaction on Circuit Theory* were articles by two of our classmates. Professor E. J. Baghdady wrote a paper entitled "Theory of Low-Distortion Reproduction of FM Signals in Linear Systems," while Professors R. B. Adler and Herman A. Haus^{54G} described two applications of circuit theory: "Network Realization of Optimum Amplified Noise Performance" and "Canonical Form of Linear Noisy Networks."

That's the news for this month. At the moment I have no information on hand for future columns, so please let me hear from . . . YOU!! — NEWTON SHANBROM, *Secretary*, 824 Gilmore Drive, Reynoldsburg 26, Ohio.

1955

Just a few tidbits this month to pass on to you. First of all, somewhat belated congratulations to Lloyd and Margie Cohen ('56) Gilson on the arrival last November (?) of a son, Steven Mark. Margie and Lloyd bought a house last summer in Springfield after their return from Fort McClellan in anticipation of the event. Margie, by the way, should be a particularly skillful mother, having spent a number of months both before and after their departure for the deep South engaged in research on disposable diapers for a Springfield firm!

Walt and Naomi Rubin are now living in Ithaca, N.Y., following their marriage during the Christmas holidays and a honeymoon in Bermuda. Walt is finishing his fourth year in the Cornell Medical School and Naomi is completing her senior year at Cornell University. Naomi, from Worcester as Walt is, was Naomi Meltzer before her marriage. In another recent wedding in Newark, Jacqueline Adler of Bloomfield, N.J., and Stan Levitt were united. Stan is with Western Electric in Jersey City, and Jackie is continuing her studies at Newark State College.

Another note from Chan Stevens recently brought to mind our fifth year reunion, a little over a year away (seems impossible, doesn't it—five years!). Just thought that you'd like to know that work has begun for this momentous event; so be sure to put it on the first 1960 calendar you receive! — MRS. J. H. VENARDE, *Secretary*, 107 Mullin Road, Wilmington 3, Del. FIRST LIEUTENANT L. DENNIS SHAPIRO, *Assistant Secretary*, 15 Linnaean Street, Cambridge 38, Mass.

1956

The pen behind the class notes has temporarily changed hands: it's Bryden rather than Bredehoft doing the writing for the next few issues. Bruce is now in Alaska, serving as communications officer at an Air Force site somewhere near Anchorage; and Montreal seems to be a somewhat more convenient place from which to handle the business than does

our newest state. Up to now, my duties as assistant secretary have consisted principally of sending occasional notes to Bruce regarding the welfare of those who communicated with me. In mid-January, Bruce and his wife arrived in Montreal bearing large filing cases full of records; it wasn't until then that I realized what the job of class secretary really entailed, and what an efficient job Bruce has been doing of it. Now that I am getting familiar with the system, have caught up on the last month's work, and have found the bottle in the back of the bottom drawer, I'm ready to go.

En route to Alaska, Bruce stopped off in Seattle and encountered John Coleman there. John now has a master's degree from Tech and is working for Boeing. He also informs us of his engagement to Miss Winifred Sibley of Melrose, Mass. Other classmates at Boeing in Seattle include John Chichester and Richard Johnson. Hank Valcour is working at the Bremerton Naval Yard, to the north of Seattle.

Frank Foster is now in Baltimore, working for the Maryland Shipbuilding and Dry Dock Company. His letter sounds as if he enjoys working and playing in the Maryland metropolis. Bill Quam is in Las Vegas, working in the nucleonics group of Edgerton, Germeshausen, and Grier. Bill's group does radiation measurement, nuclear research, timing, and firing at the Nevada test site, and also in the Pacific. Bill expects to be transferred to the Santa Barbara area in the not too distant future.

As Bruce has been pointing out for months, our Class seems to be convinced that Eastern girls are the best. It appears that the trend still continues. In November, Kenneth Miller married Polly Lynn Uber of Cambridge, in a ceremony at the M.I.T. Chapel. Virginia Coburn recently married Robert M. Clarke of Jamestown, R.I. Roger Borovoy, now in his final year at Harvard Law School, is engaged to Brenda Ruth Gordon of Newton Centre, Mass. As a change of pace, Vilma Espin married Raul Castro, younger brother of Cuban leader Fidel Castro, in Santiago, Cuba, in January. The wedding was one of the social high lights of Cuba in January, and was appropriately covered by *Time* magazine.

On the service front, David Kaplan and Luigi Cicolani are both at Moffet Field in California. Luigi received his master's degree in aeronautical engineering from Tech recently. Tom Cain is with the Air Force in Albuquerque, N.M. Bill Randolph is with the Army in Europe, while Robert Watt is at Fort Benning in Georgia.

In the classroom, Arthur Frank received his M.S. in biochemistry from the University of Pennsylvania in June, 1958. He is now a first year medical student at New York University-Bellevue Medical School. Jim Hamblet is at the Babson Institute of Business Administration.

In an attempt to generate a reasonable amount of information to fill this column, Bruce and I are attempting to select some eager assistants in areas where there are a large number of class members. We hope that these assistants will keep in touch with a reasonable number of the people in their area and will keep us sup-

plied with information. Looking over the records, Los Angeles and New York seem to be two cities in which we could use a regular correspondent. So far, we have found one willing volunteer in the Boston area. Jack Saloma, who is now doing graduate work at Harvard, has agreed to keep us up on Boston news. I'm hoping we can find a few more people who will turn out to be regular correspondents.

As a reminder to the uninitiated, it costs no more to send a letter to Montreal than it does to send one inside the U.S. In addition, there is the added thrill that you may get a reply with a Canadian stamp on it. I'm expecting some mail in the next few months. — SECOND LIEUTENANT BRUCE B. BREDEHOFT, *Secretary*, A.O. 3067617, 705th AC and WRON, A.P.O. 948, Seattle, Wash. M. PHILIP BRYDEN, *Assistant Secretary*, 3684 McTavish Street, Montreal 2, Quebec, Canada.

1956G

George Patterson, 3d, of Annapolis, Md. was wed to Mrs. Francis Walker Harding. George was graduated from the U.S. Naval Academy in 1950, attended Harvard and M.I.T.'s School of Industrial Management. His bride was graduated from the Winsor School and Vassar College. Towson, Md., will be the new home of the Pattersons.

Chemical engineer and former teaching assistant Reynold B. Nippe is with Shawnigan Resins in Springfield, Mass. and resides in Boxford, Mass., with his wife and child. John Niesse, Sc.D. in Mechanical Engineering, has remained on Tech grounds in Cambridge. George Murray is at Pennsylvania State University. Word has it that Dr. Eugene Bilenker has settled in Elizabeth, N.J., with his family. Dr. Bilenker came from the Department of Food Technology.

Walter Knowles has returned to Needham, Mass., from Ft. Meade, Md. Bill Breckenridge, Jr., is at 160 North Bonnie, Pasadena, Calif. John Wiley and Sons, Inc., reports that one of the contributors to *The Scanlon Plan*, a new text on industrial management, was Elbridge S. Puckett. — LIEUTENANT (j.g.) CHARLES T. FREEDMAN, *Secretary*, U.S.S. *Independence*, CVA-62, F.P.O., New York, N.Y.

1957

Well, news seems to be decaying exponentially. Let's cut that out; at least mail us your address so we can forward you a pencil.

Ira Holtzman was visiting Boston recently. He is now at the Wharton School at the University of Pennsylvania, after working for Boeing in Seattle last summer. He expects his master's in business administration in June, as does Al Kotliar, who is working part time for Philco.

Not so long ago glad tidings reached us of the birth of Suzan Paula to Sumner Abrams and his wife. On December 27, Miss Susan Merritt became the bride of John Armitage. John is now employed as an optical engineer in Newton, Mass. Marvin Feldman recently completed a

15-week radio teletype operation course at the Army's Southeastern Signal School, Fort Gordon, Ga. He was employed at Foster Grant Nylon, Inc., in Manchester, N.H., before entering the Army.

Mary Roan, who had been working for the Laboratory for Electronics in Boston, has joined the technical staff of International Telephone and Telegraph Laboratories in New Jersey. Last fall Mary flew to London and Cairo for a well deserved vacation; and, as a result, she is now studying foreign languages quite intensely.

Jay Hammerness is finishing up a six months' stay at Fort Stewart in Georgia. The Army naturally made good use of his S.B.'s in Mechanical Engineering and Industrial Management: they put him to work building three miles of railroad, leading a crew of some other poor recruits. — MARTIN R. FORSBERG. ALAN M. MAY, *Secretary*, 55 East End Avenue, New York 28, N.Y. MARTIN R. FORSBERG, *Assistant Secretary*, 383 Harvard Street, Cambridge 38, Mass.

1958

Hello again, ever faithful reader. As we come together for another monthly visit, there are a few items which deserve primary consideration. Dipping into our still plentifully stocked news bag, we find that more of our fellow graduates of the Class of '58 have ventured into the field of matrimony. I should, by the way, apologize for the fact that these announcements are usually quite a few months removed from their occurrence by the time they reach print here in the friendly class notes corner; but a complete listing of all nuptials would probably fill a *Tech Review* issue all by itself. So we'll continue to wend our way along slowly but surely, trying to catch up on a few of them each month.

First of all, Ken Welsh, VII, was married to Sarah Wiley of Lynnfield Center, Mass., in nearby Gloucester 'way back in late August. The couple are currently residing in Lee, N.H., while Ken completes a year of graduate study at the University of New Hampshire. Next fall he'll be entering medical school at Western Reserve University in Cleveland, while his wife, who graduated from Huntington College in Huntington, Ind., will be doing graduate work also at Western Reserve. Roy Miller, V, wed Jean Cedergren of the Boston University School of Fine and Applied Arts in her home town of Norwalk, Conn., also in August. Jim Galbraith, VIII, was best man, by the way. Roy and his bride are currently living in Danbury, Conn., and Roy is a chemist with American Cyanamid in Norwalk. Still another August wedding was that of Robert Lofgren, II, to Mary McKey of Mount Holyoke Col-

lege and Dummerston, Vt., in that town. Following a honeymoon in Bermuda, the couple settled in Goshen, Conn. Paul Busch, who received simultaneous S.B.'s in I and XXI-A in June, "awarded a Mrs. degree" to Iris Greenberg of Simmons and New Haven, Conn., also at the end of August. They're now living here in Boston, since Paul is back at M.I.T. in the Course I graduate school, specializing in sanitary engineering. Time for just one more: Donald Wyckoff, XVI, to Valerie May Abdou of Rockport, Mass., here in Boston. She was a June grad from Simmons. They're now making their home out in Santa Monica, Calif., and Don is in the aeronautical engineering department with AiResearch in Los Angeles.

Items in the Here and There Department: Clive Eustace, S.M. in XV, is living in West Hartford, Conn., while employed by the Plax Corporation in nearby Bloomfield. He was a Harvard undergrad, while his wife (Barbara Jane Whitaker from East Hartford), who received her master's degree in education from Boston University, was a Class of '57 grad from Radcliffe. Gilbert Speich, Sc.D. in III (B.S. from Illinois Institute of Technology and M.S. from Wisconsin), distinguished himself professionally as a coauthor of a recent paper entitled "Rapid-quenching Hot State for Metallography" appearing in the December issue of the *Review of Scientific Instruments*. Rich Johnson, III, whom I mentioned a month or so ago as a grad student here at Tech this past fall term, has enrolled at Harvard for the spring semester under a program leading to a degree in science teaching.

I've been trying to squeeze in something about the note-worthy group of Fulbright Fellowship winners in the Class of '58. At last here they are, as announced under the International Educational Exchange program of the U.S. Department of State: Peter Abeles, Master in City Planning (IV-B), to study city and regional planning in Israel; Art Bergles '57, S.B. and S.M. in II, to study mechanical engineering at the Technical University in Munich, Germany; Melvin Brady, S.M. in VI, to study electrical engineering at the University of Bergen in Norway; Bob Hecht, VI, whom we've mentioned in a previous article, to study sensory perception at the Technical University in Stuttgart, Germany; Paul Jolly, VIII, to study solid state physics, also at the Technical University in Stuttgart; Mike Meeker, VIII, to study the history and philosophy of science in France; and Robert Scott, Ph.D. in VIII (B.S. from the University of Southern California), to study physics at the University of Paris. Dick Thoft, V, was also awarded a grant to study chemistry at Philips University in Marburg, Germany,

but had the unusual distinction of turning the award down. Dick elected instead to travel only as far as a mile or so up the Charles River to enter Harvard Medical School this past fall.

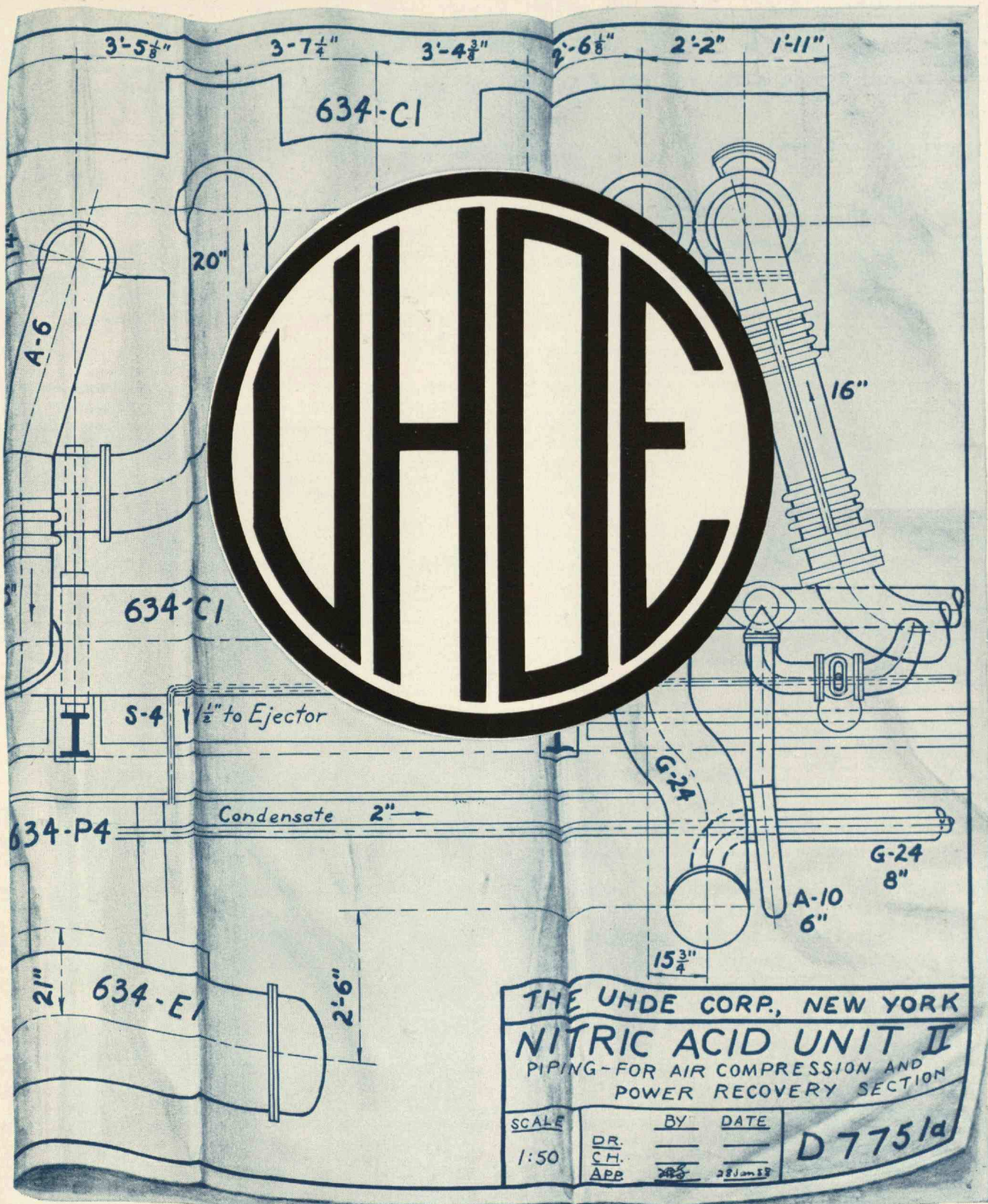
A couple of other items have come before me recently which I'd like to pass along to all of you. I'm sure you received a copy of Dick Hughes's letter around the first of the year (provided you've remembered to keep your correct address on file in the Alumni Office — that's another little point you might check up on). In case you're not aware of Dick's position, he's class agent for '58; and his address, should you be wishing to contact him at some future time, is 19 West Pleasant Street, Hamilton, N.Y. I'd just like to recommend here his message concerning the uses and importance of the Alumni Fund, of which we will be contributing a portion, including the national scholarships awarded yearly from these gifts. Your hard-working (?) Reporter hopes that the year's subscription to the *Technology Review* (including thereby, of course, the class notes section), which is sent to all contributors to the Alumni Fund, will be incentive enough by itself for all us fledgling engineers and scientists.

From the M.I.T. Club of New York comes a letter relating the activities and programs of that group in and around the New York City metropolitan area. Monthly luncheon meetings for the Classes of '56 through '58 are scheduled at the Hotel Biltmore on Wednesday of the first full week (defined as including the first Monday) of every month. So if you live in the New York City vicinity or just happen to be passing through, why not drop in for a visit?

Finally, let me use this early date to remind all of you of Alumni Day coming up on Monday, June 15. I certainly hope that all who can make it back for the first time as an old grad will be planning to be here, both "to check up on whether they're still teaching engineers the good old way they did when I was an undergrad" and to witness the inauguration of Dr. Stratton as President of the Institute. If all goes well for me, I hope to be around to see a good many of you once again.

Please note the dual address given below — both my new apartment home and my old mailing address. If neither of these appeals to you, you can always try the Alumni Office at M.I.T. or my home address at 99 Price Boulevard, West Hartford, Conn. Translated, all this leads to the obvious fact that these are four times as many good reasons for you to drop me a line sometime.

See you next month, same old corner, — HERB JOHNSON, *Secretary-Treasurer*, 92 Marlborough Street or 484 Beacon Street, Boston 15, Mass.



CHEMICAL
 PROCESS
 DESIGN

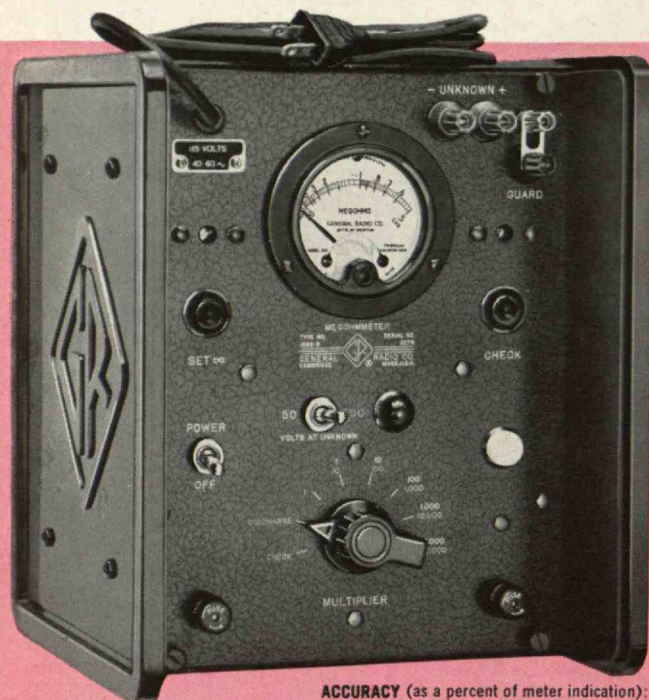
THE **UHDE CORPORATION**

350 FIFTH AVENUE, NEW YORK 1, N.Y.
 8204 Empire State Building

2

WIDE-RANGE INSTRUMENTS

for industrial R and C measurements



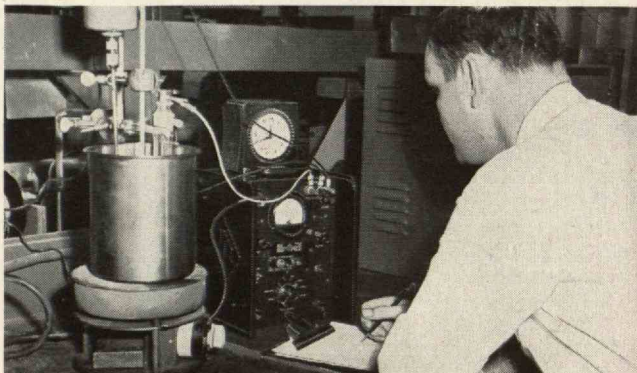
RANGE: 0.5 to 2,000,000 Megohms at 500v
0.5 to 200,000 Megohms at 50v
(in six decade steps)

ACCURACY (as a percent of meter indication):

Test Voltage	Low End	Mid-Scale	High End
50v	±5%	±10%	±14%
Add. ±5% error on lowest multiplier setting			
500v	±3%	±8%	±12%
Add. ±2% error on highest multiplier setting			

For Insulation and Resistance Measurements
Type 1862-B Megohmmeter, \$225

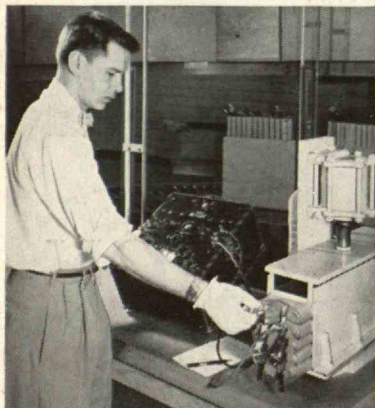
- ★ Measures up to 2,000,000,000,000 Ohms Directly
- ★ Two Test Voltages Provided Internally: 50v and 500v
- ★ For Either Two- or Three-Terminal Measurements
- ★ Highly-Stabilized Power Supply Minimizes Meter Fluctuations Caused by Line-Voltage Variations
- ★ Panel Safety Switch Shunts "Unknown" Terminals to Discharge Capacitive Component of Unknown



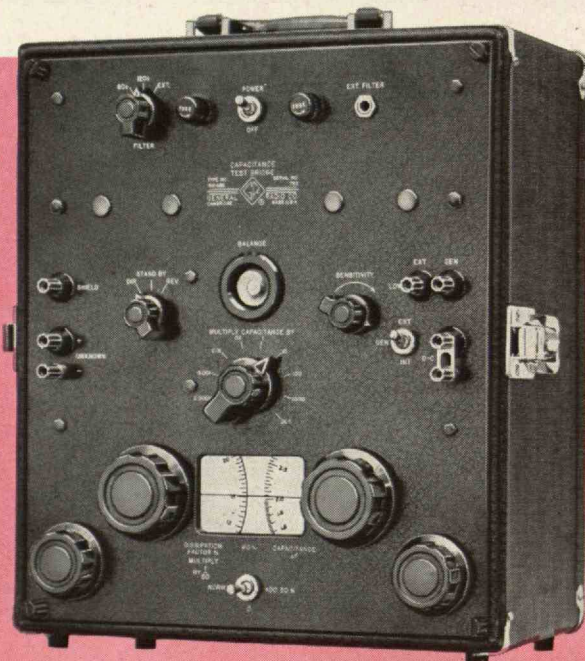
At AMP, Incorporated, Capatron Division, Elizabethtown, Pennsylvania, research engineer uses the 1862-B Megohmmeter for resistivity measurements of insulating liquids at elevated temperatures.

For Capacitance and Dissipation-Factor Measurements
Type 1611-B Capacitance Test Bridge, \$570

- ★ Tests Electrolytics in Accordance with EIA Standards
- ★ 10-Billion-to-One Capacitance Range
- ★ Built-in Magic-Eye Null Detector and 60-cycle Source
- ★ Notch Filter Provided to Improve Balancing Accuracy for 60- and 120-cycle Measurements (Jack Provided for External Filter at Other Frequencies)
- ★ External Polarization Voltages up to 500v, dc can be Applied to Electrolytic Capacitors
- ★ For either Two- or Three-Terminal Measurements
- ★ Shielded to Prevent Electrostatic Pickup



G-R Type 1611 Capacitance Bridge in use at Sangamo Electric Company, Quality-Control Department, Pickens, South Carolina. Inspector is measuring "dry" capacitance of individual sections of "Diactor" capacitors used for power-factor correction in distribution systems. Capacitor sections are measured under pressure to simulate conditions when assembled in a protective case.



RANGES:	Frequency	Capacitance	Dissipation Factor
	60c	0.00001 μ f to 11,000 μ f	0 to 60%
	Other low frequencies up to 1 kc (external signal source required)	0.1 μ f to 11,000 μ f	Range proportional to frequency (0 to 120% at 120c)

ACCURACY: Capacitance, $\pm 1\%$ Dissipation Factor, $\pm (2\% \text{ of dial reading} + 0.05\% \times \frac{1}{60})$

ACCESSORY TYPE 1214-D 120-Cycle Oscillator . . . \$100

GENERAL RADIO COMPANY

275 MASSACHUSETTS AVENUE, CAMBRIDGE 39, MASSACHUSETTS

Write For Complete Information

NEW YORK AREA

CHICAGO

PHILADELPHIA

WASHINGTON, D.C.

SAN FRANCISCO

LOS ANGELES

IN CANADA